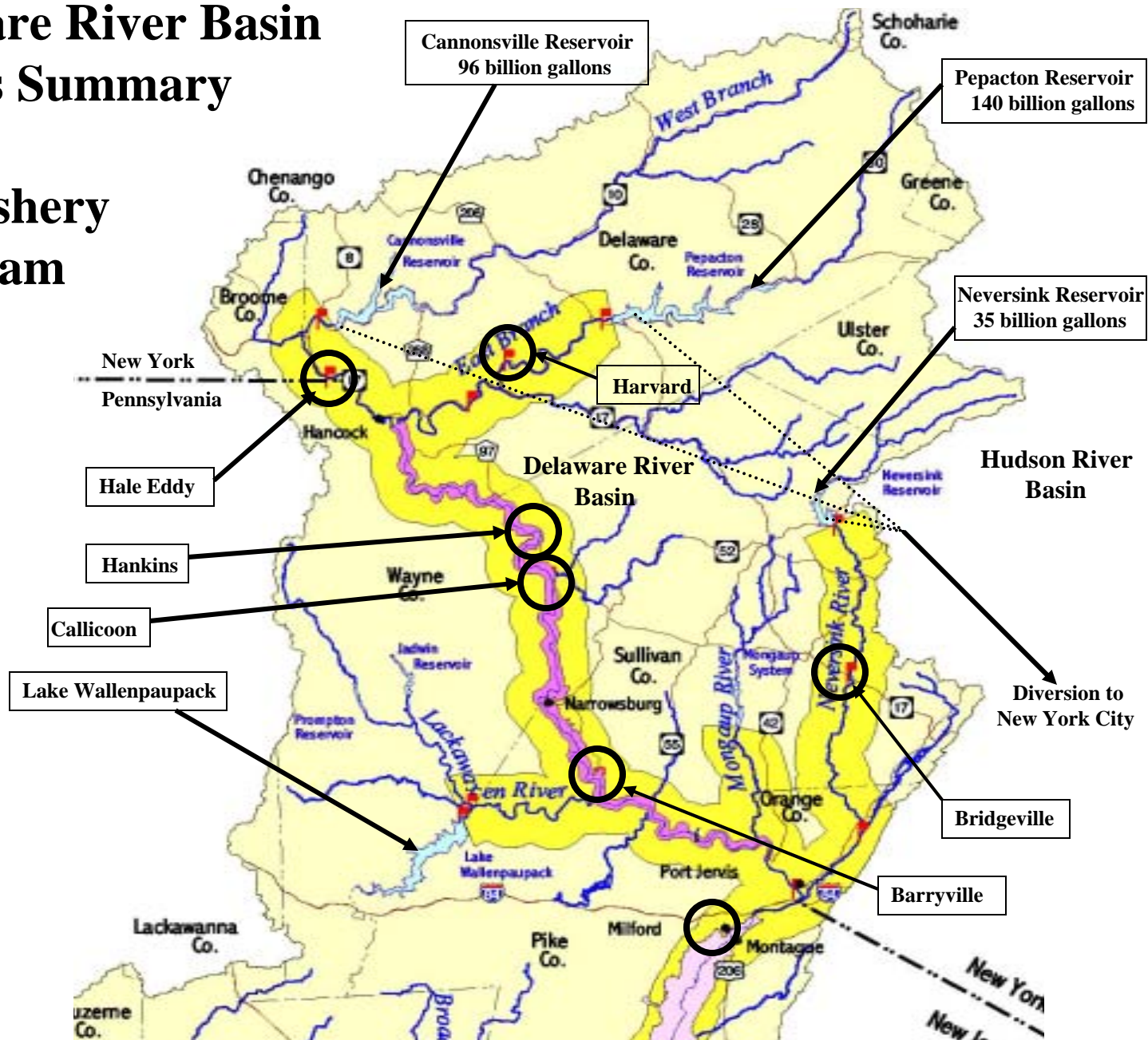


Upper Delaware River Basin Model Results Summary

Analysis of Fishery Release Program Proposal



Analysis of Fisheries Release Program Proposal

**Based on approximation of
existing and proposed operations
using two versions of the
Delaware River Basin OASIS Model**

“Existing Plan”

Represented by OASIS run (NY2 no PPL) which approximates D-77-20 CP Rev 4 and includes operation of Lake Wallenpaupack without implementation of the revised drought operating plan.

“Proposed Plan”

Represented by OASIS run (NY7) which approximates the proposed fishery plan and includes revised operation of Lake Wallenpaupack which was approved by Resolution 2002-33. It does not include the amelioration bank.

Comparison of Mean Monthly Flows Existing vs. Proposed Operation

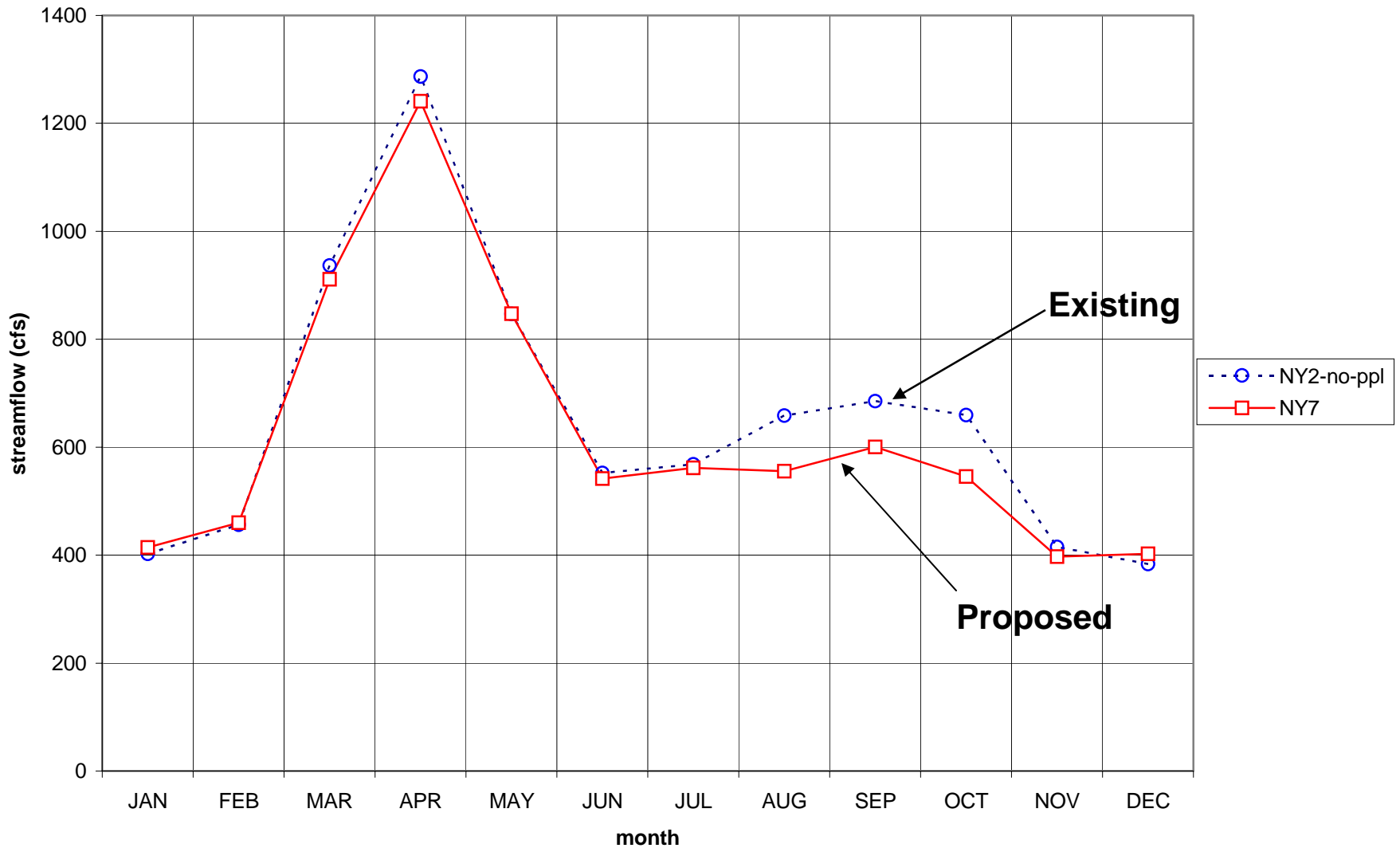
Hale Eddy

Callicoon

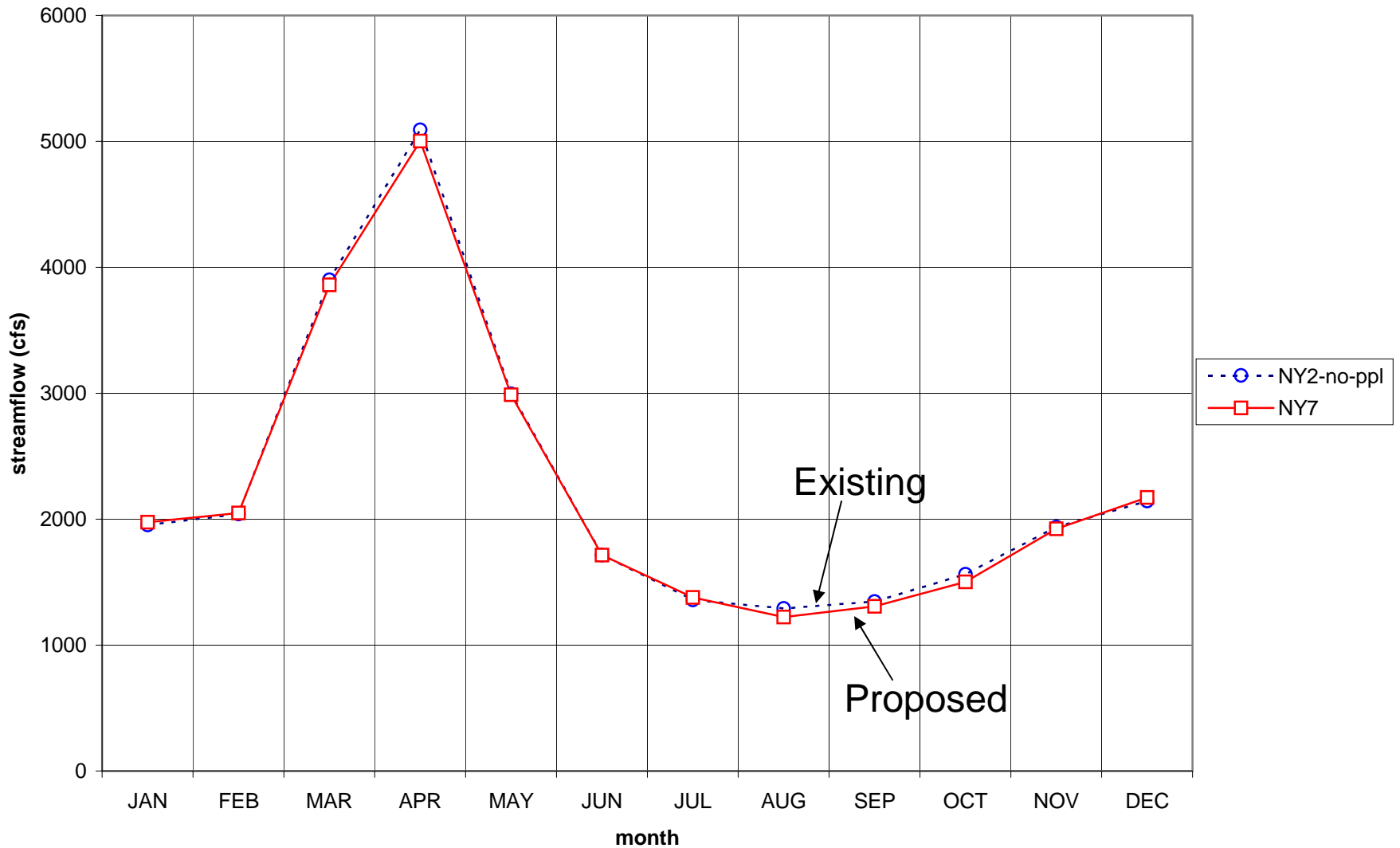
Harvard

Bridgeville

West Branch Delaware R at Hale Eddy - Average Monthly Flows (cfs)
Compare results from two OASIS runs

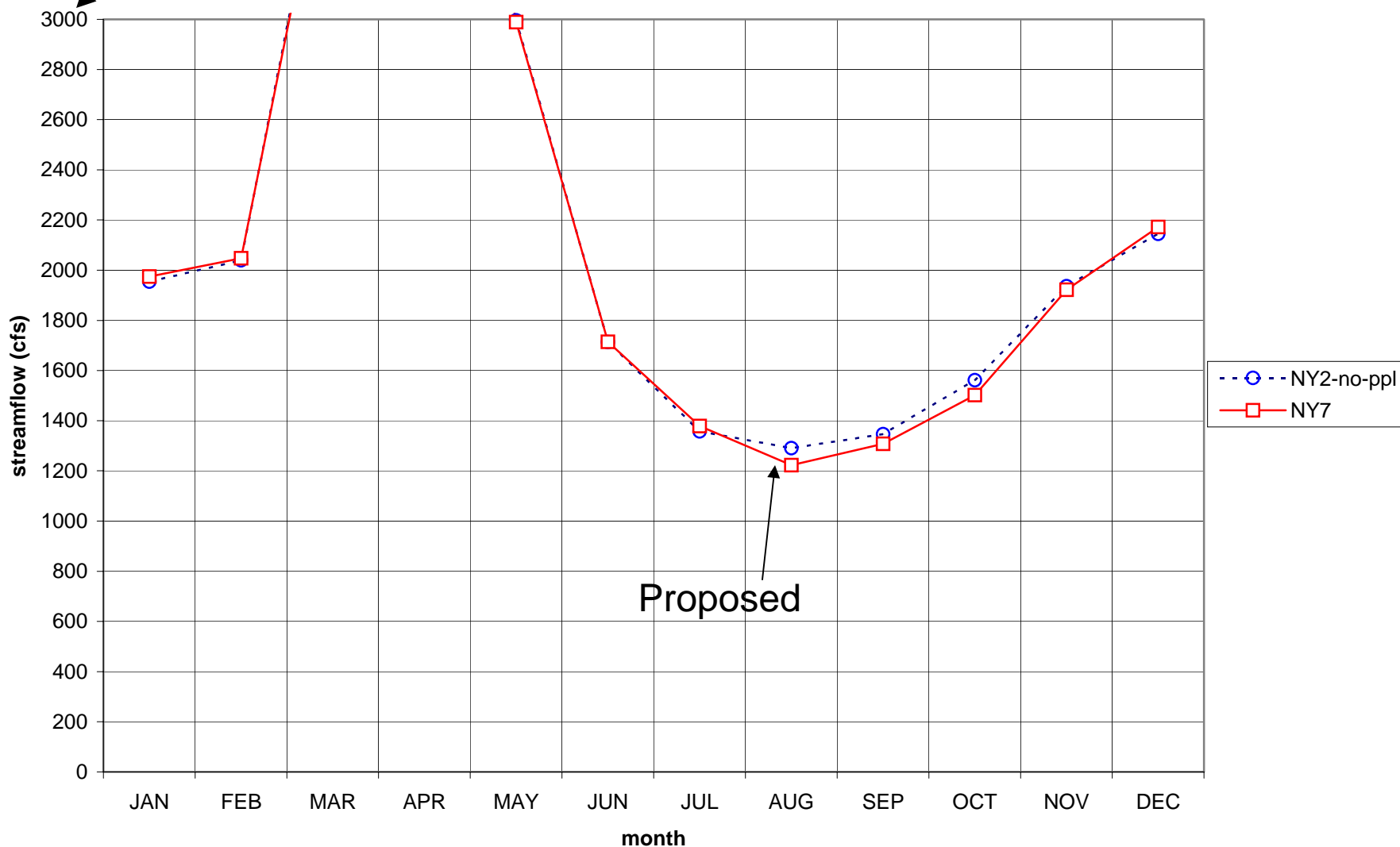


Delaware R at Callicoon - Average Monthly Flows (cfs)
Compare results from two OASIS runs

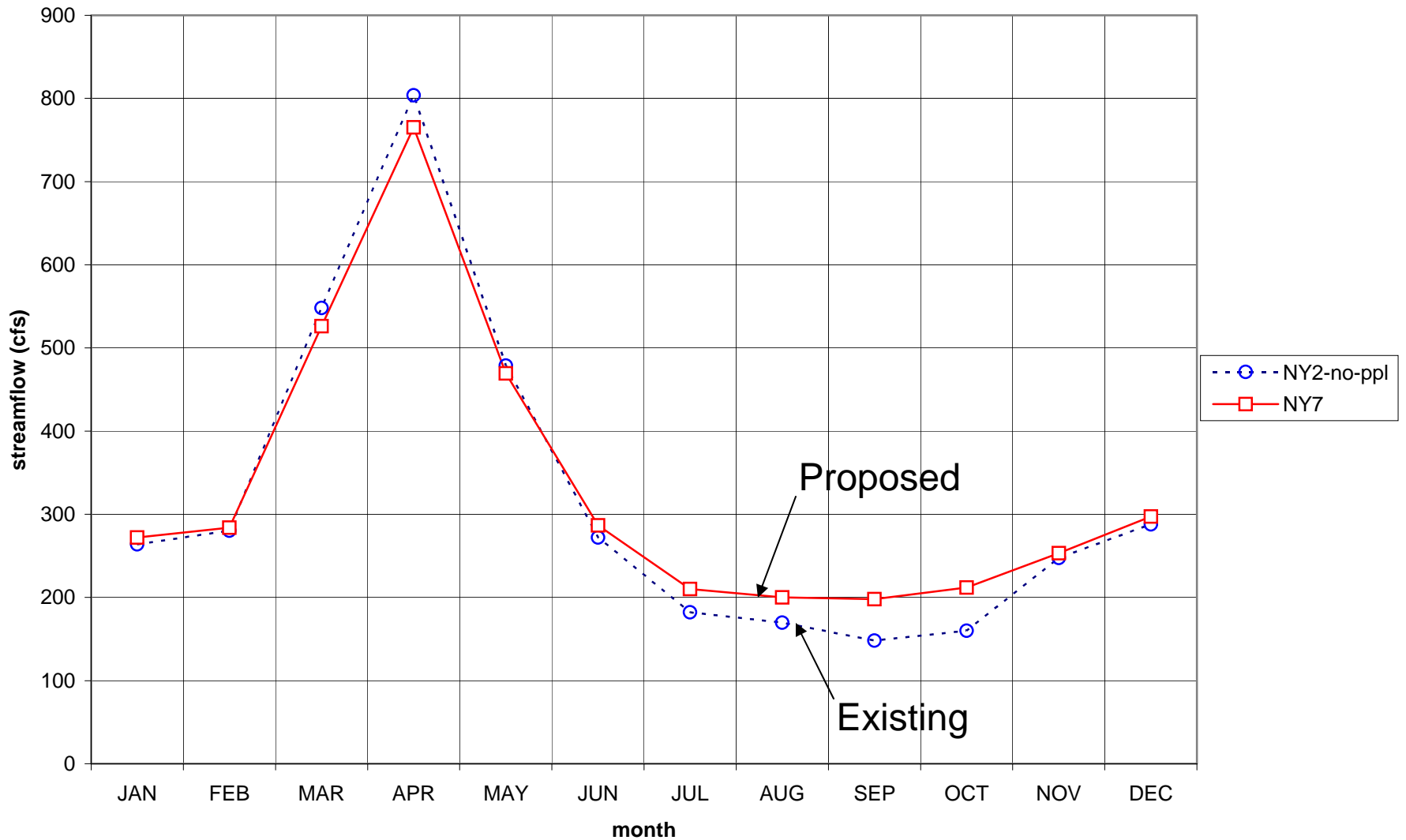


Expanded Scale for Callicoon

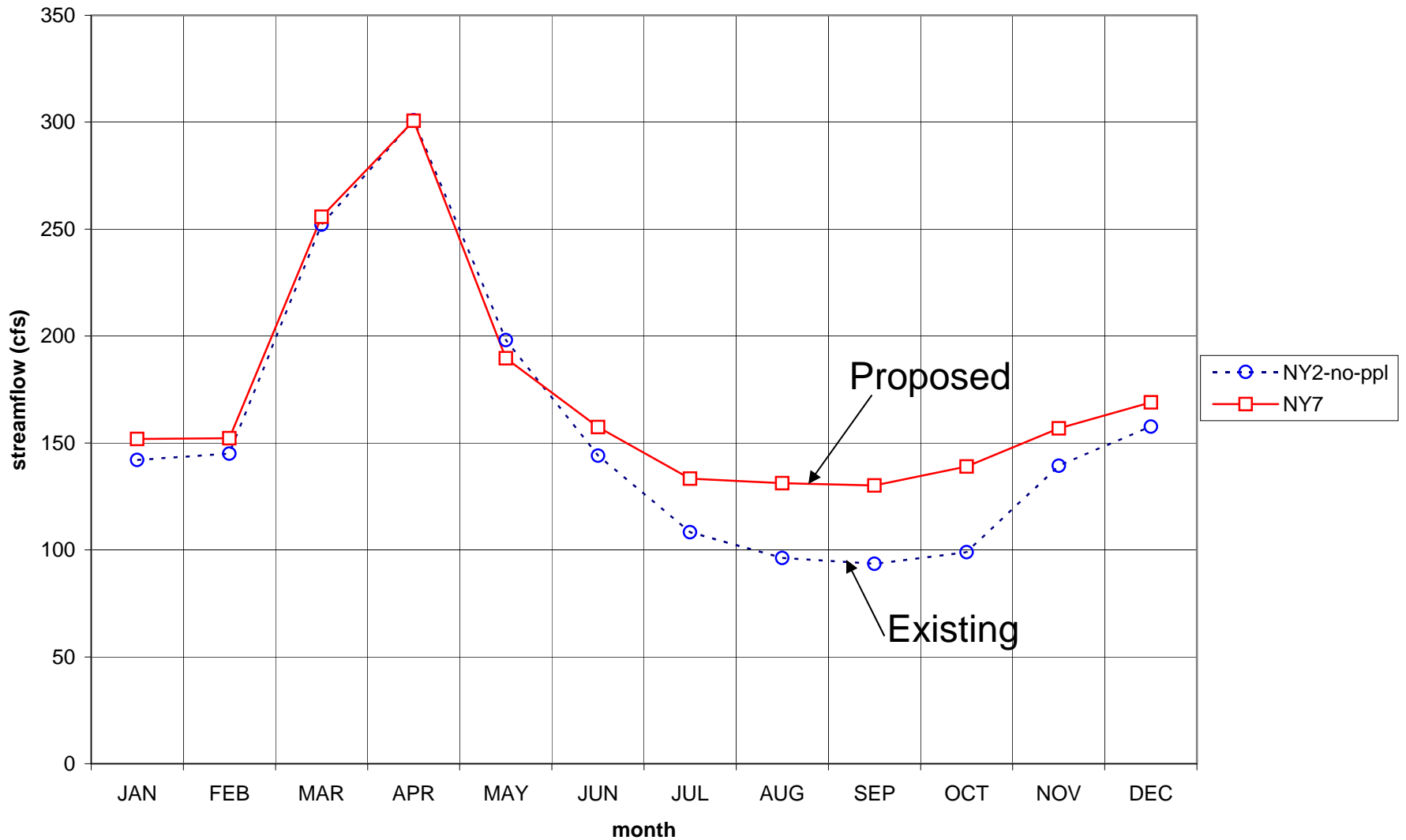
Delaware R at Callicoon - Average Monthly Flows (cfs)
Compare results from two OASIS runs



East Branch Delaware R at Harvard - Average Monthly Flows (cfs)
Compare results from two OASIS runs



Neversink R at Bridgeville - Average Monthly Flows (cfs)
Compare results from two OASIS runs



Flow Duration by Month

Existing vs. Proposed Operation

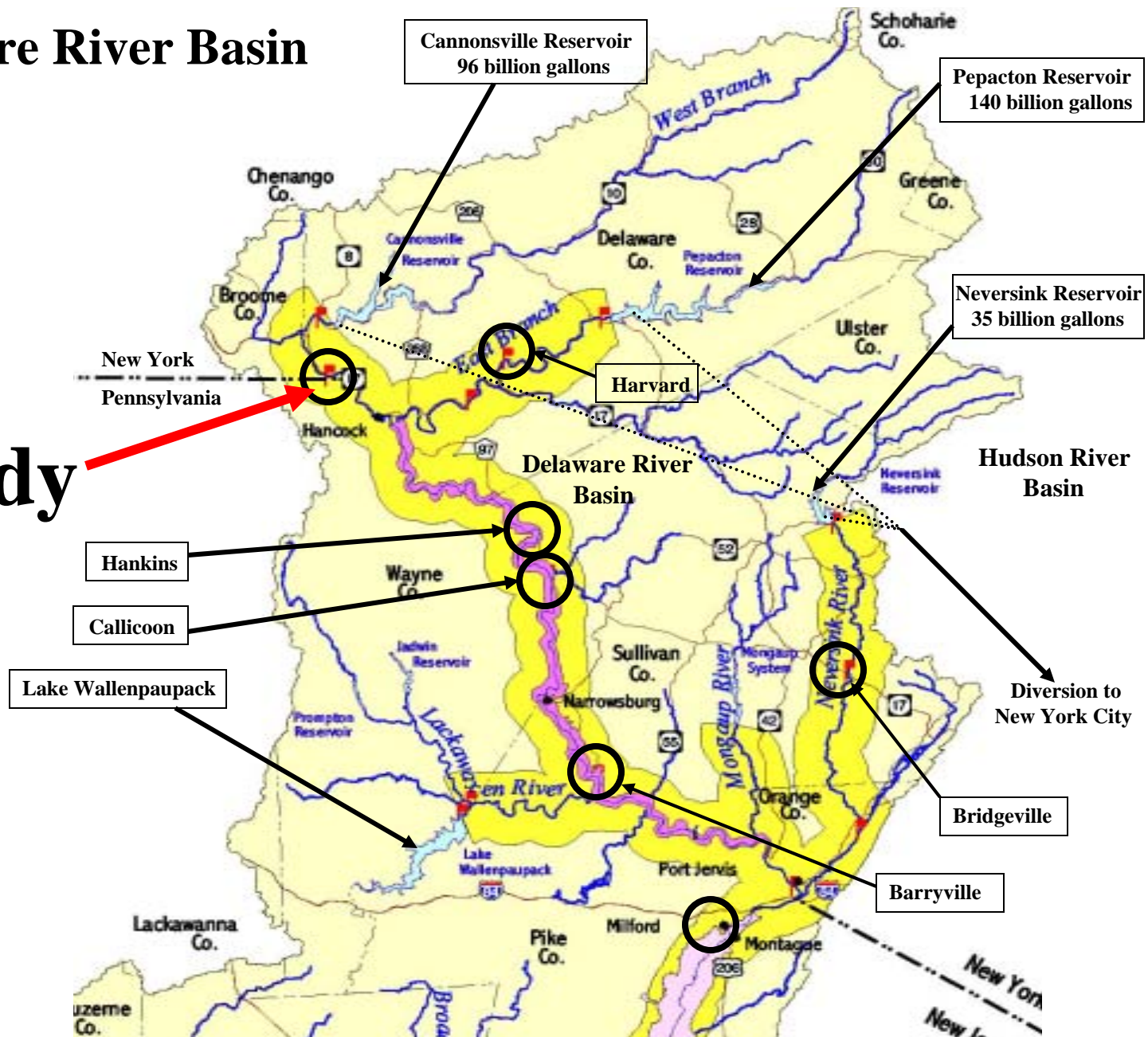
Flow duration curves show the flow value that will be equaled or exceeded a given percentage of the time.

For example, the flow value corresponding to 0.9 on the horizontal scale is equaled or exceeded 90 percent of the time. In other words, the flow is higher than this value 90 percent of the time and lower than this value 10 percent of the time.

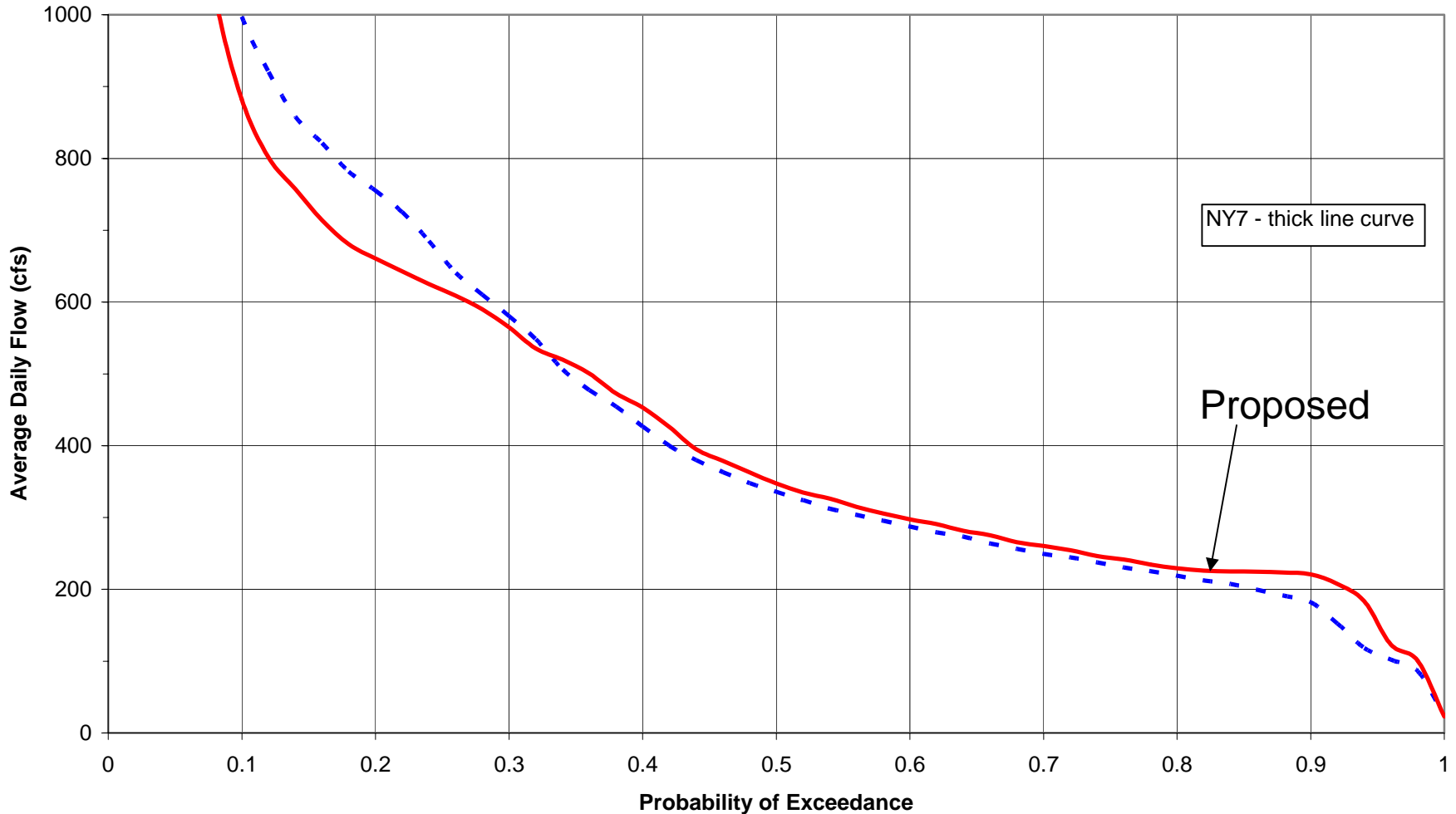
The results are based on a repeat of hydrologic conditions for the period 1928-1986.

Upper Delaware River Basin

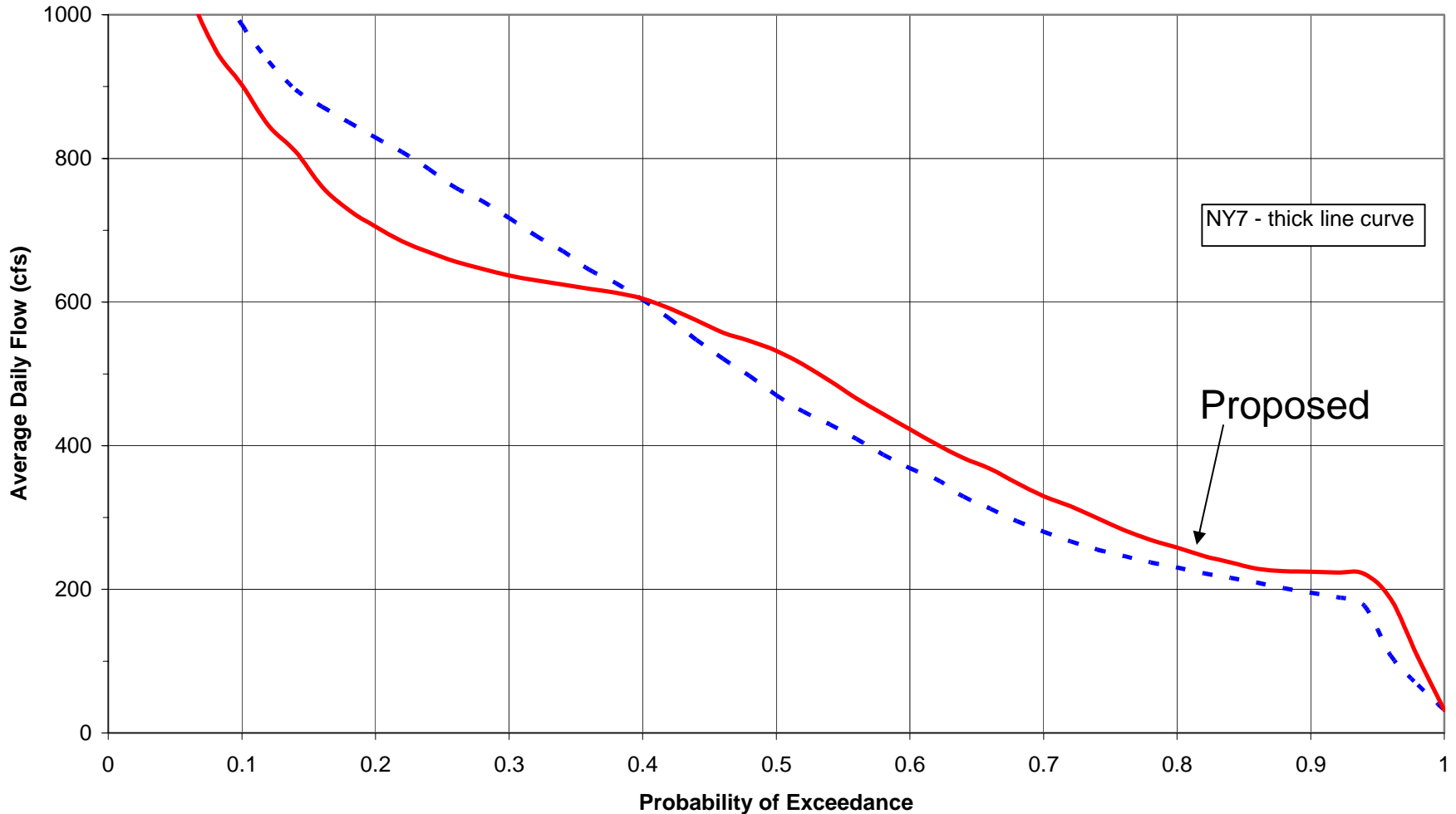
Hale Eddy



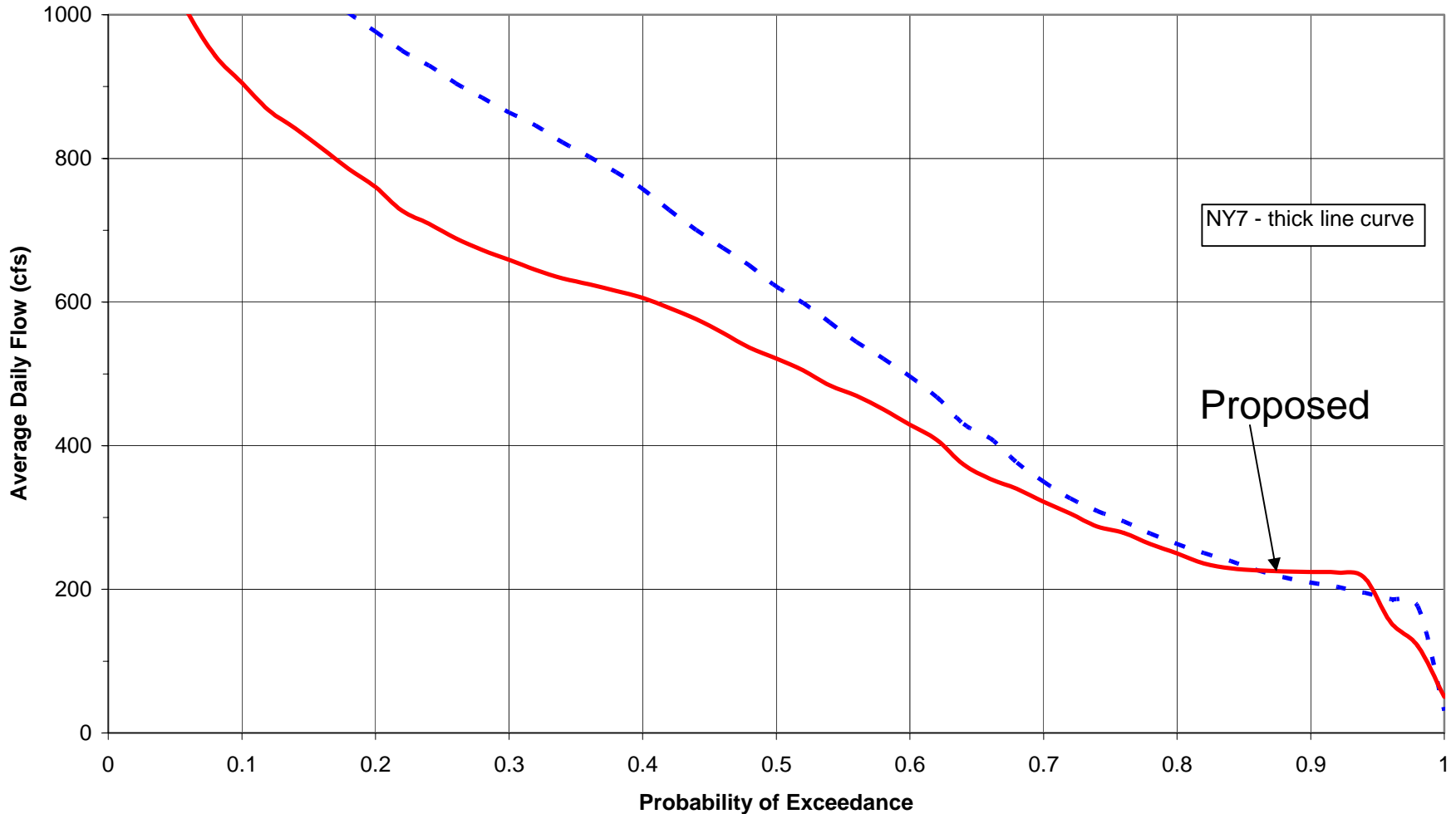
West Branch Delaware R at Hale Eddy
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of JUNE
[computed on daily flows]



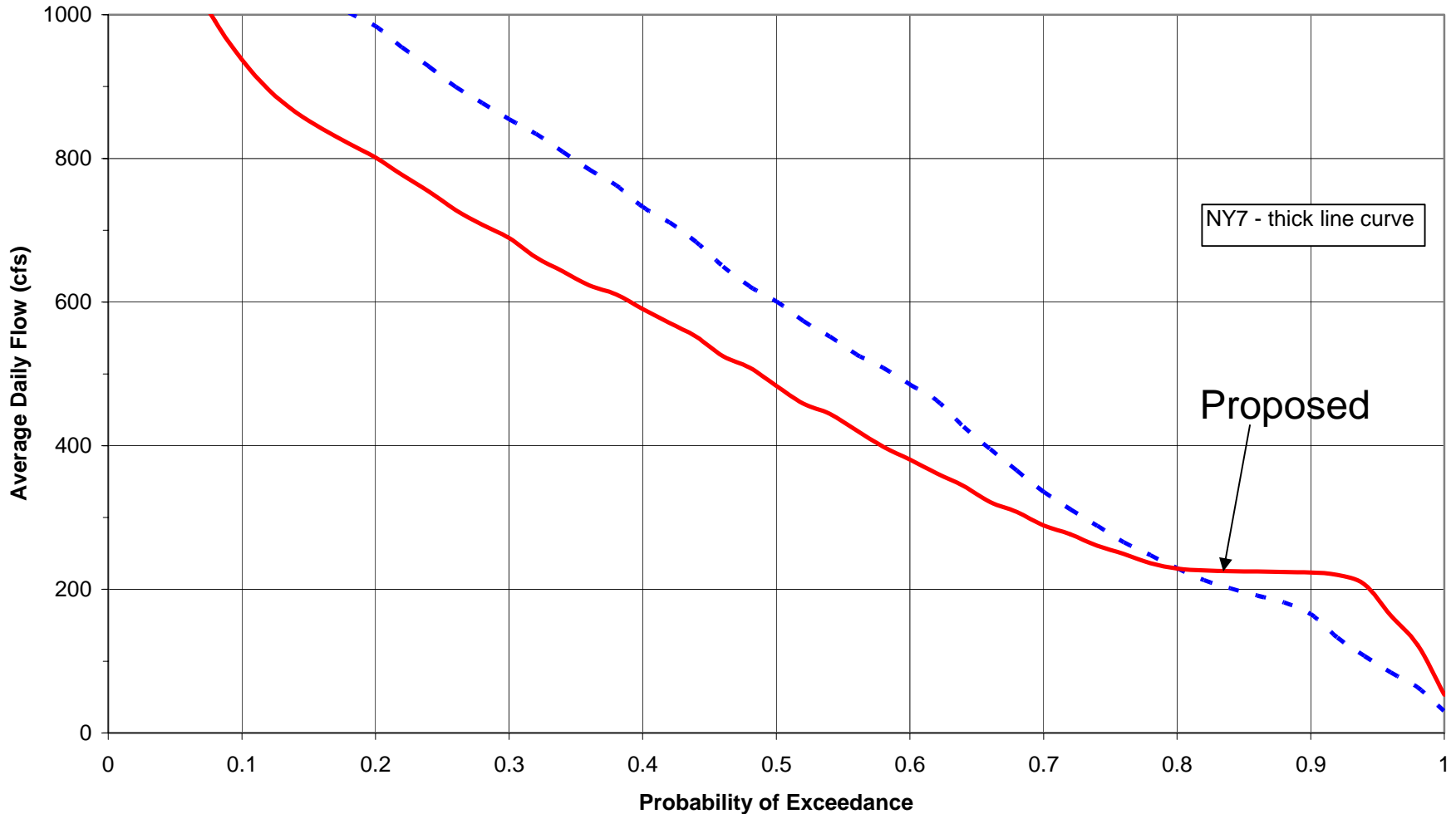
West Branch Delaware R at Hale Eddy
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of JULY
[computed on daily flows]



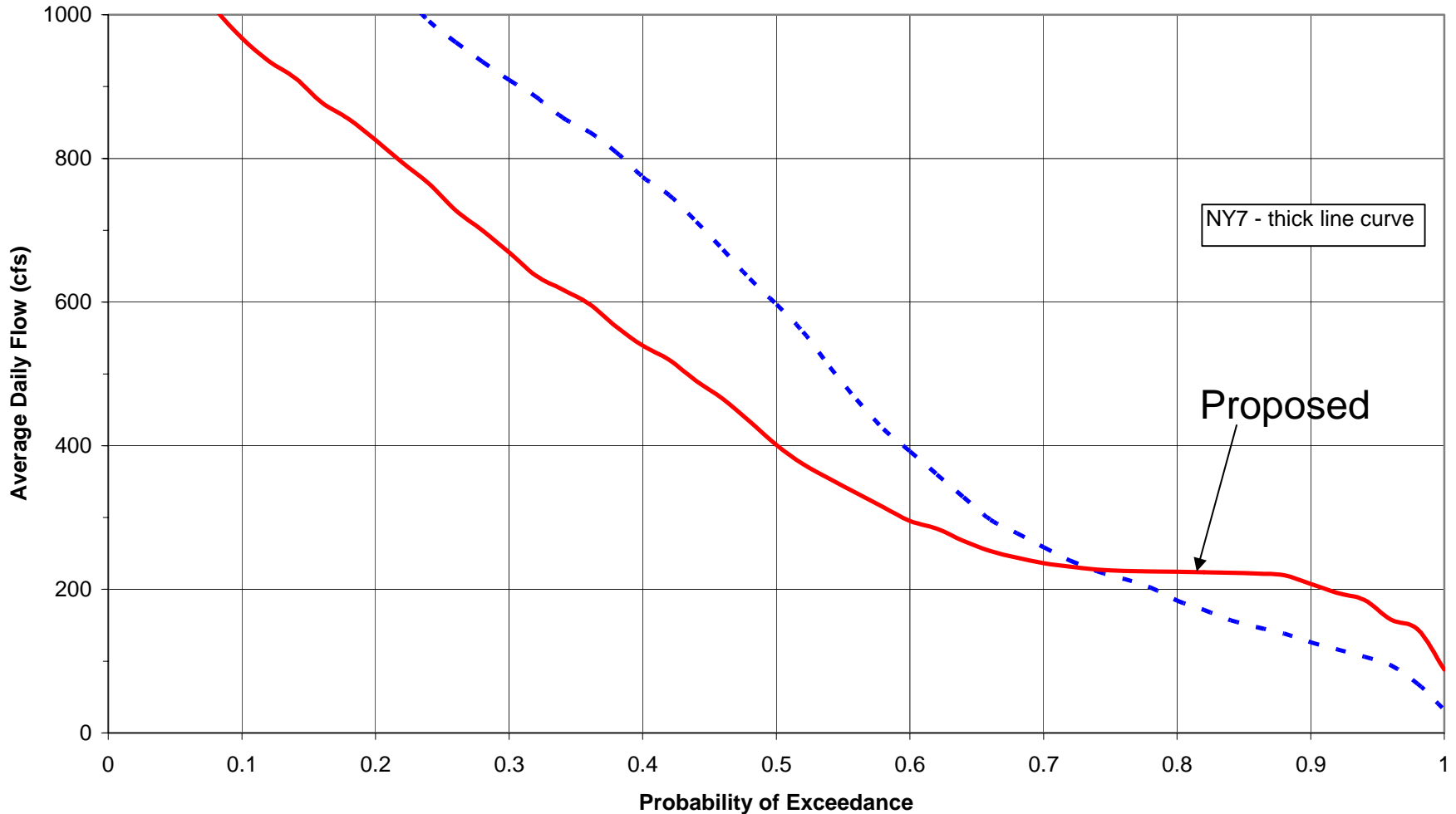
West Branch Delaware R at Hale Eddy
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of AUGUST
[computed on daily flows]



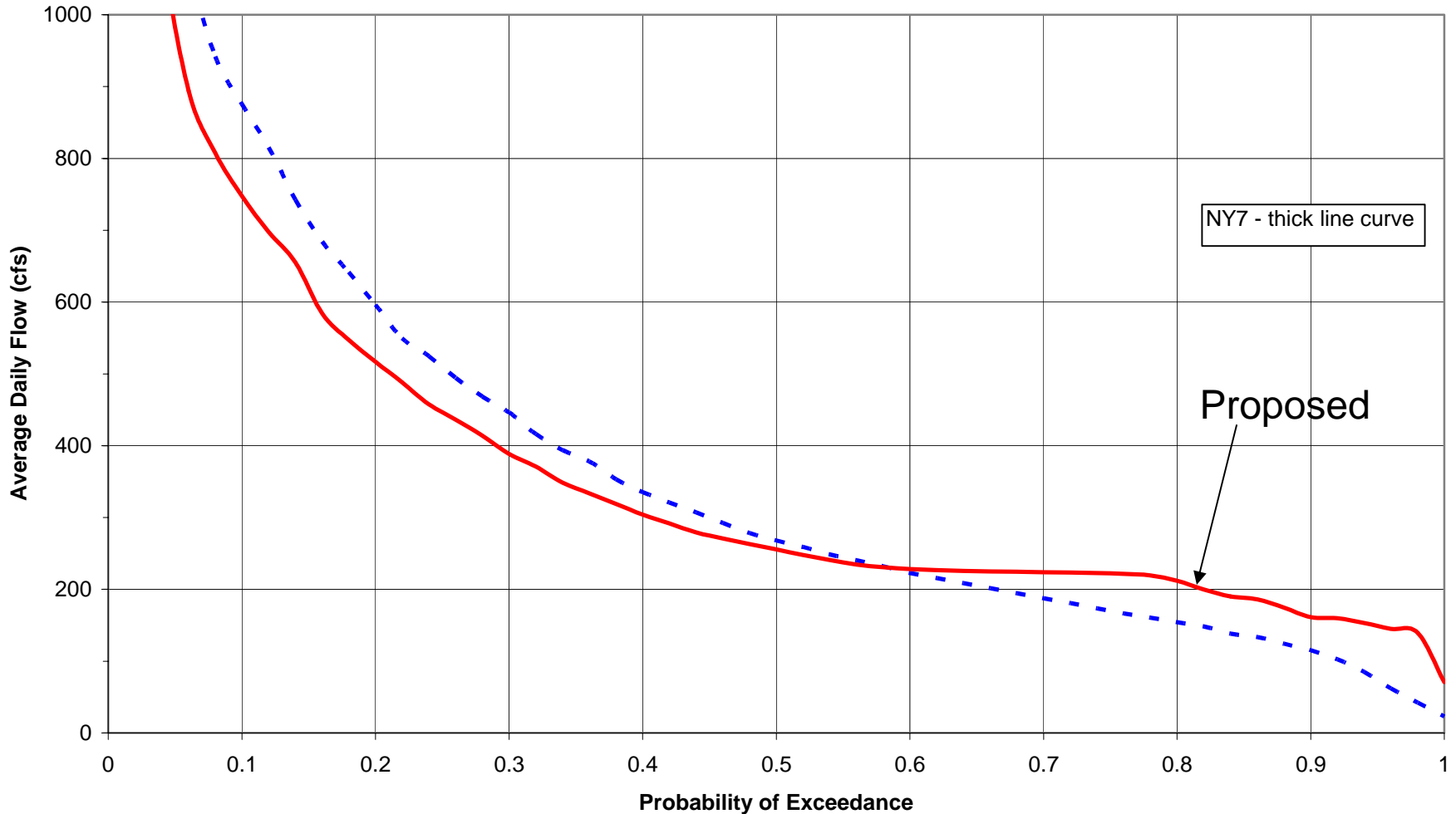
West Branch Delaware R at Hale Eddy
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of SEPTEMBER
[computed on daily flows]



West Branch Delaware R at Hale Eddy
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of OCTOBER
[computed on daily flows]

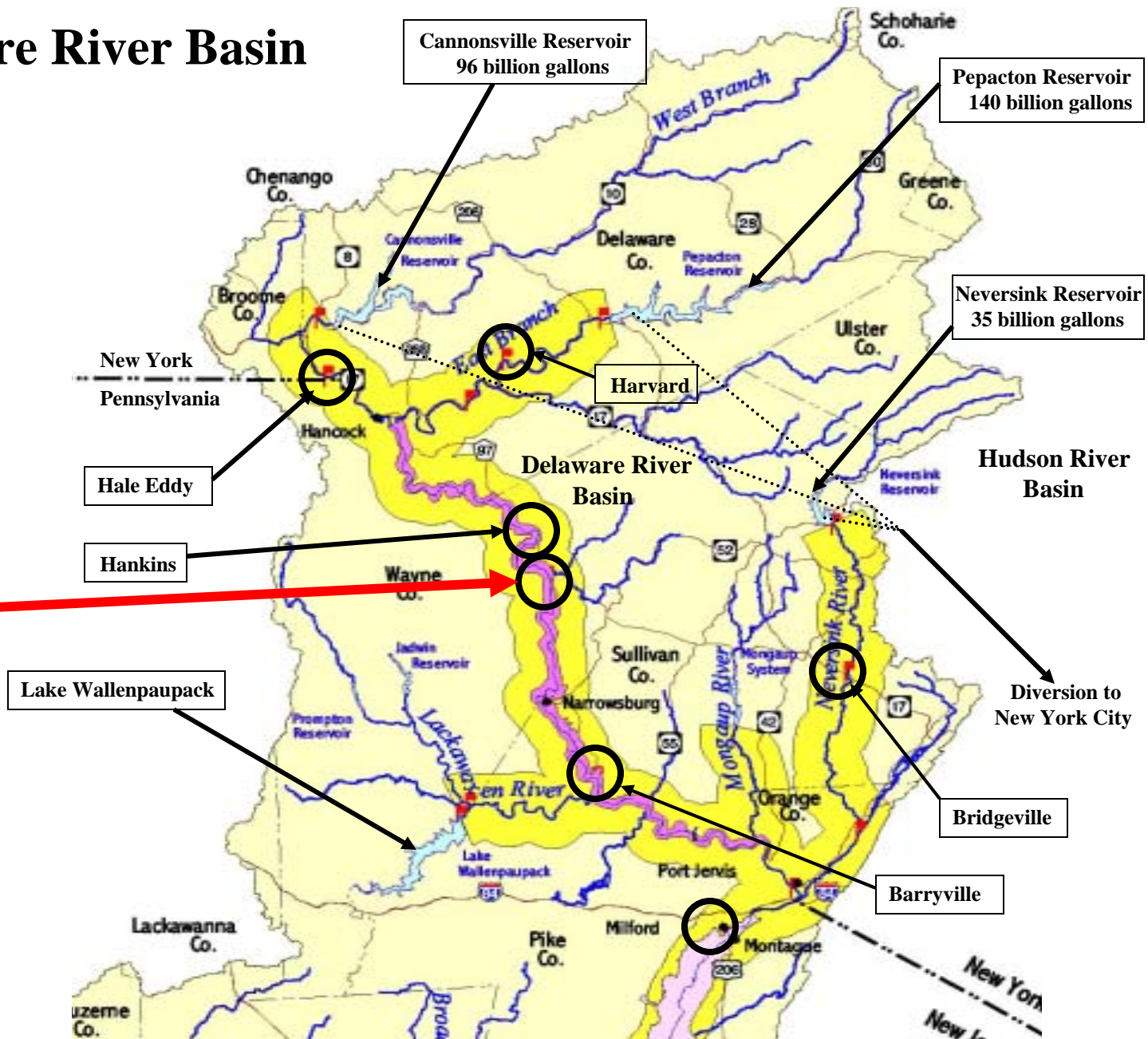


West Branch Delaware R at Hale Eddy
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of NOVEMBER
[computed on daily flows]

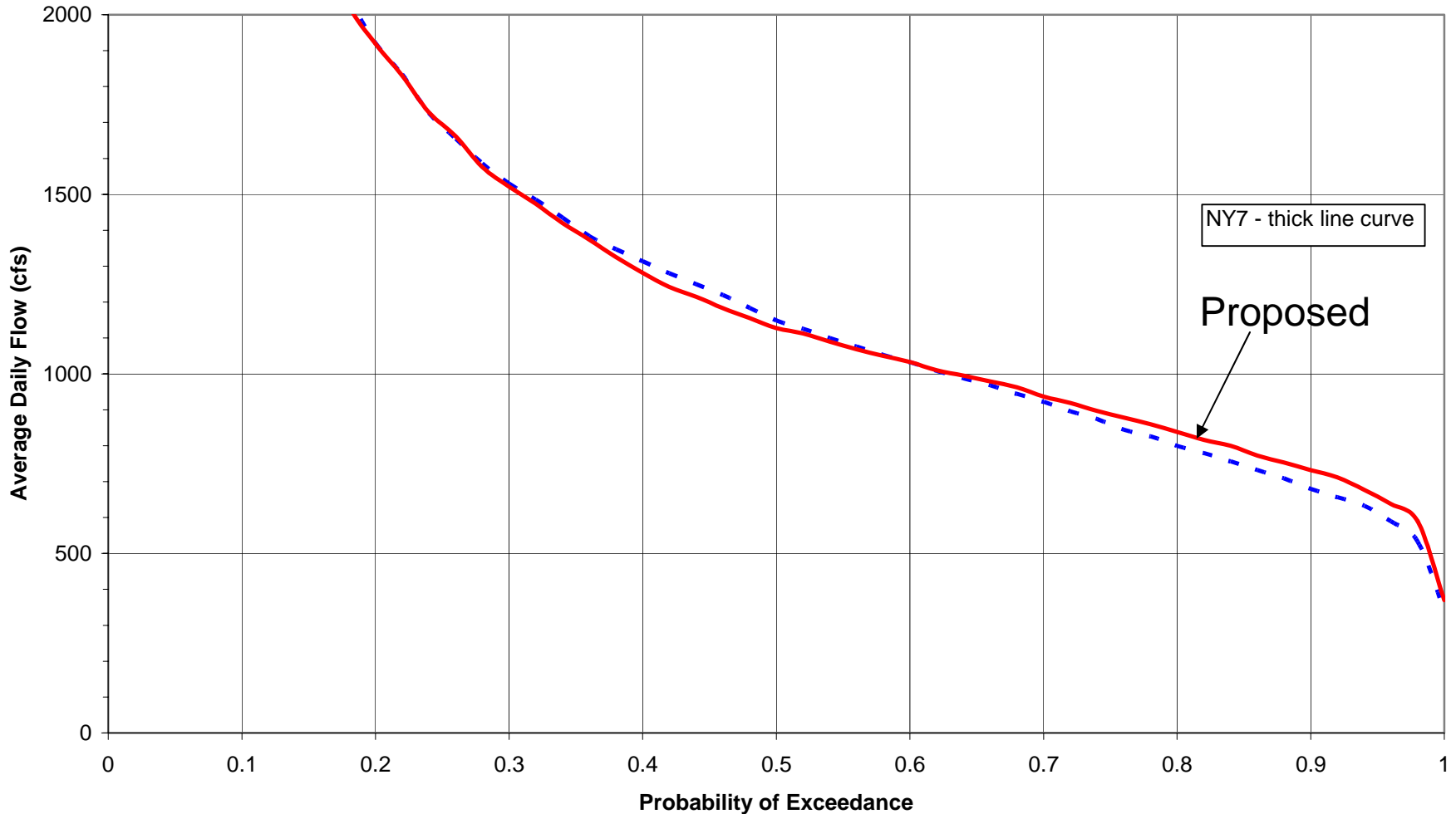


Upper Delaware River Basin

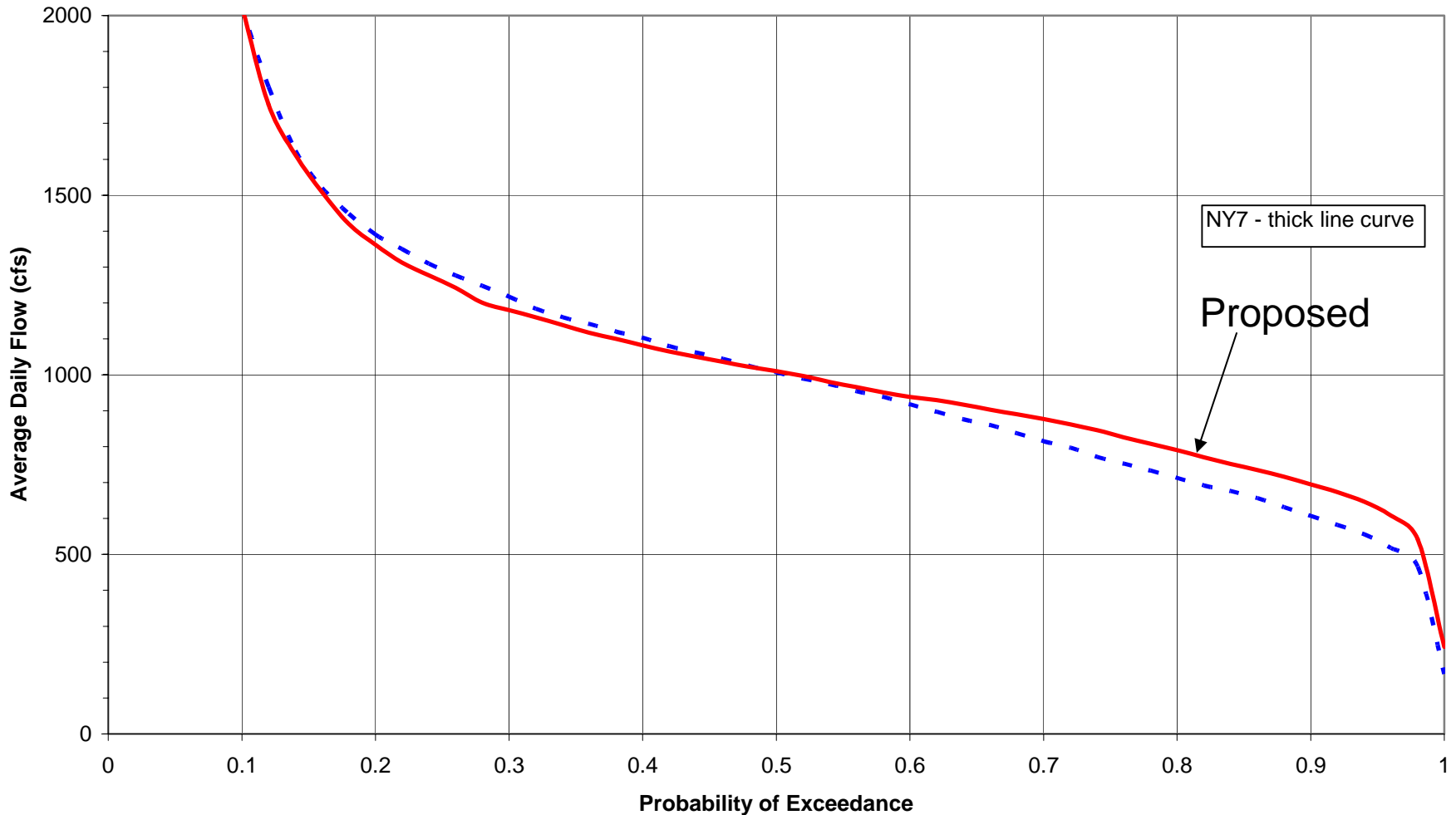
Callicoon



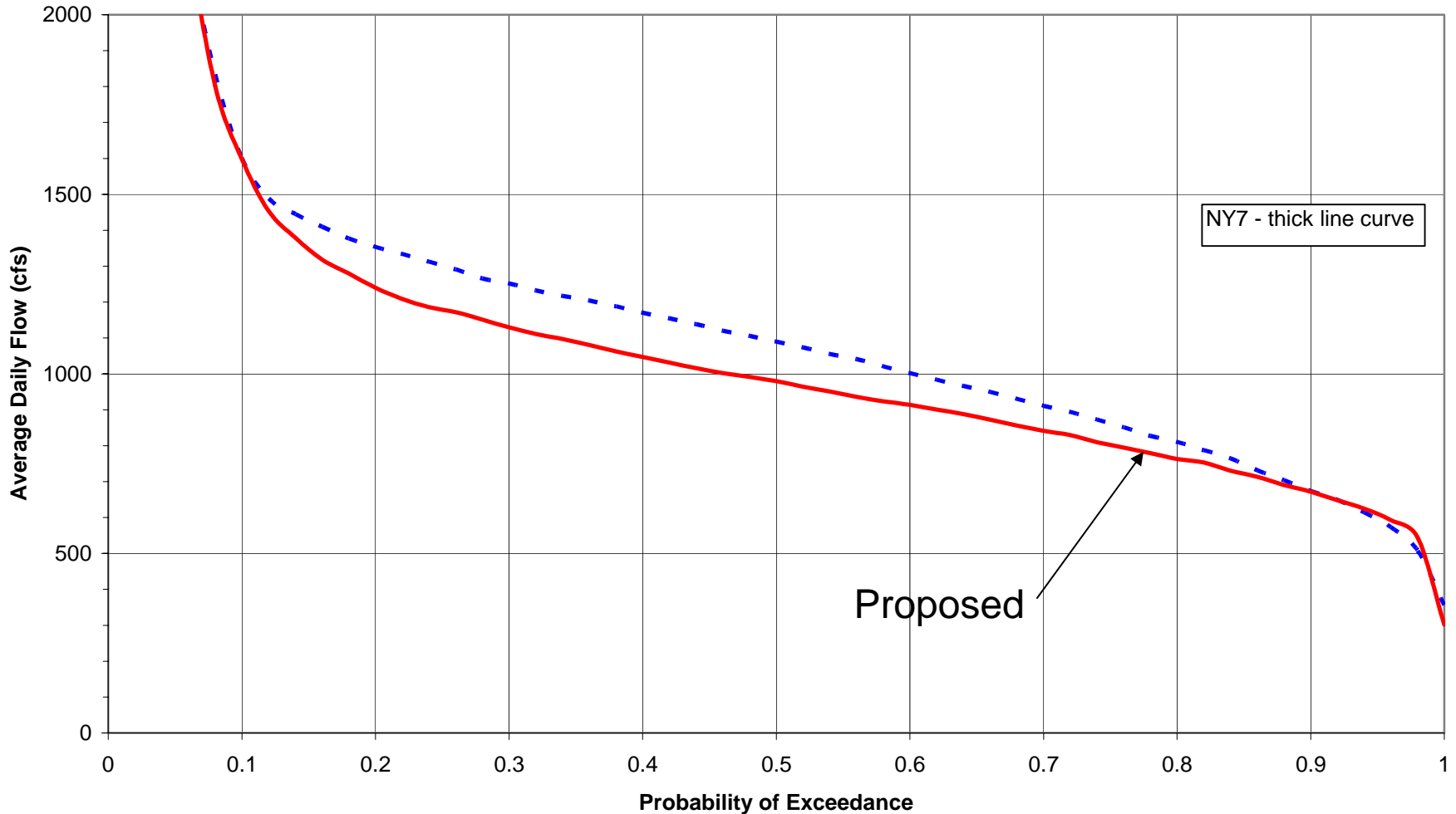
Delaware R at Callicoon
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of JUNE
[computed on daily flows]



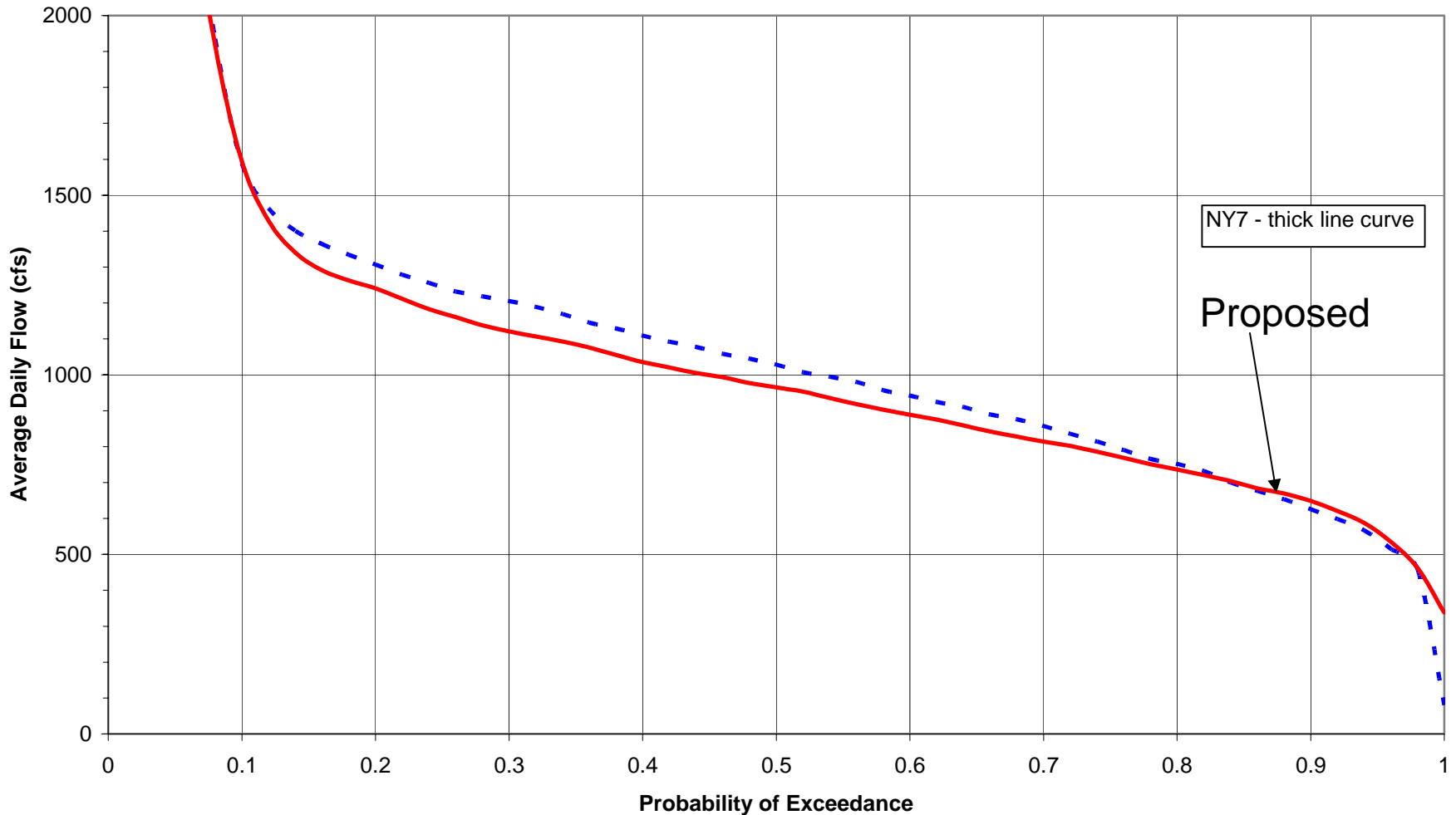
Delaware R at Callicoon
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of JULY
[computed on daily flows]



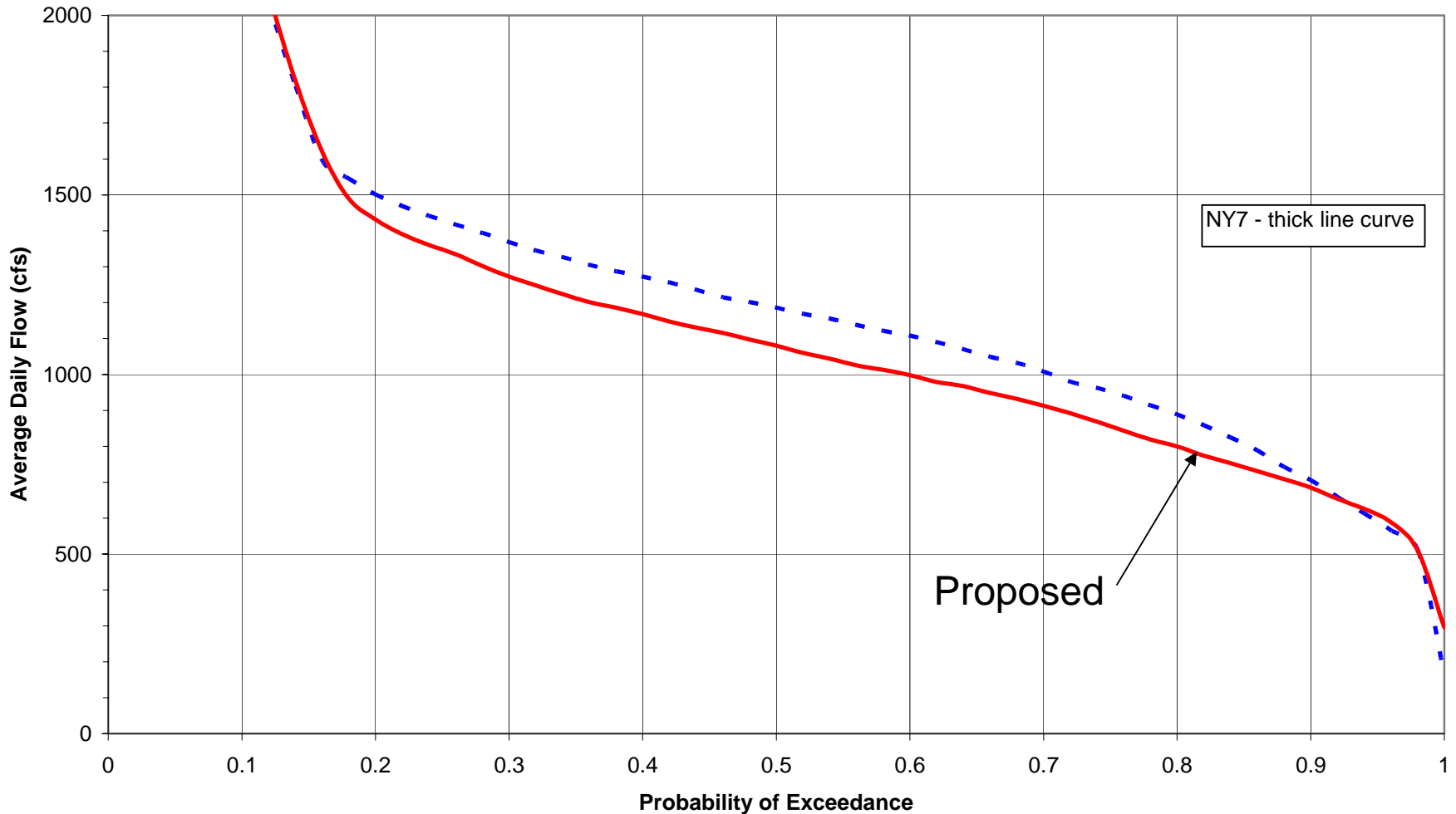
Delaware R at Callicoon
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of AUGUST
[computed on daily flows]



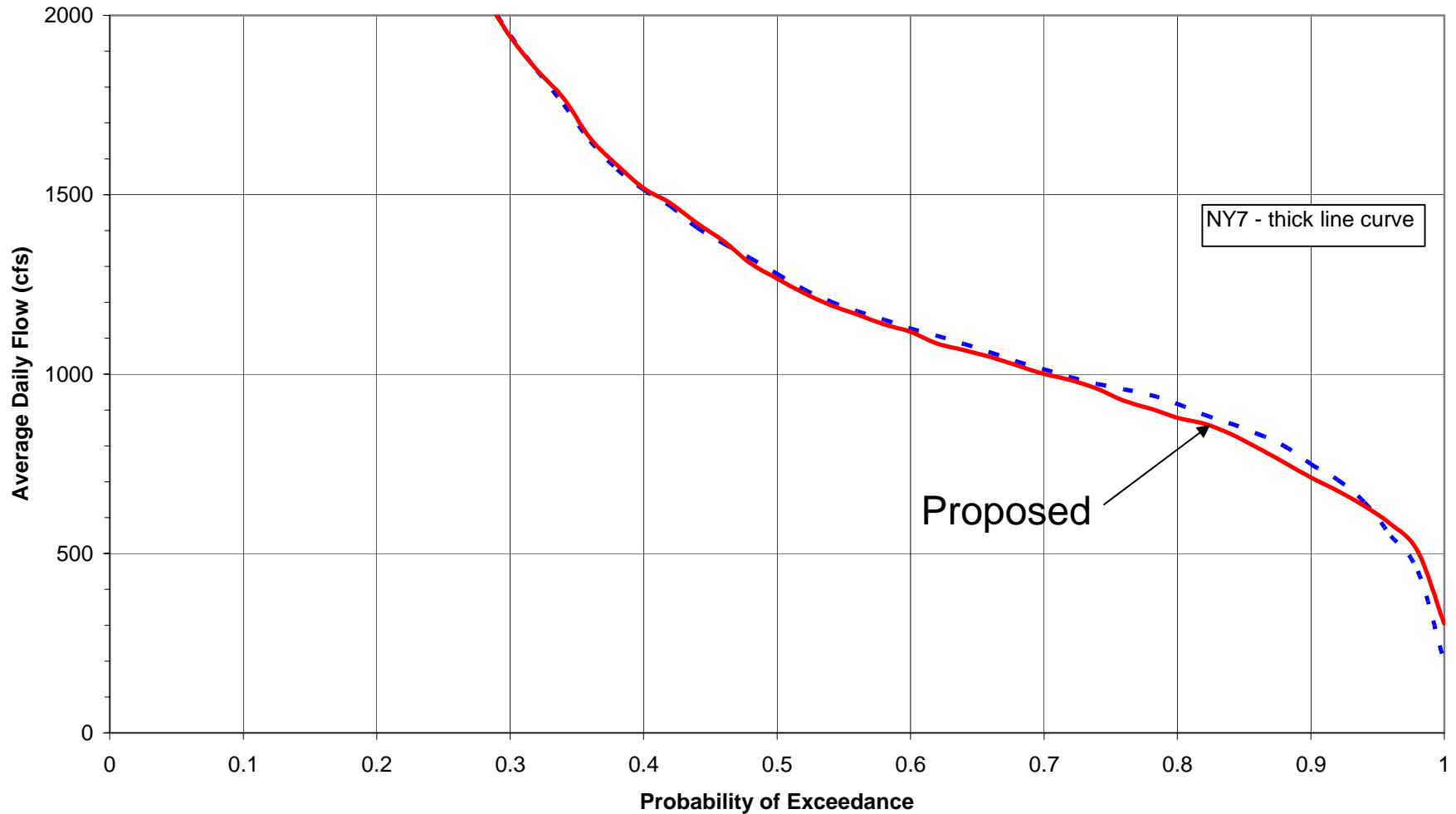
Delaware R at Callicoon
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of SEPTEMBER
[computed on daily flows]



Delaware R at Callicoon
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of OCTOBER
[computed on daily flows]

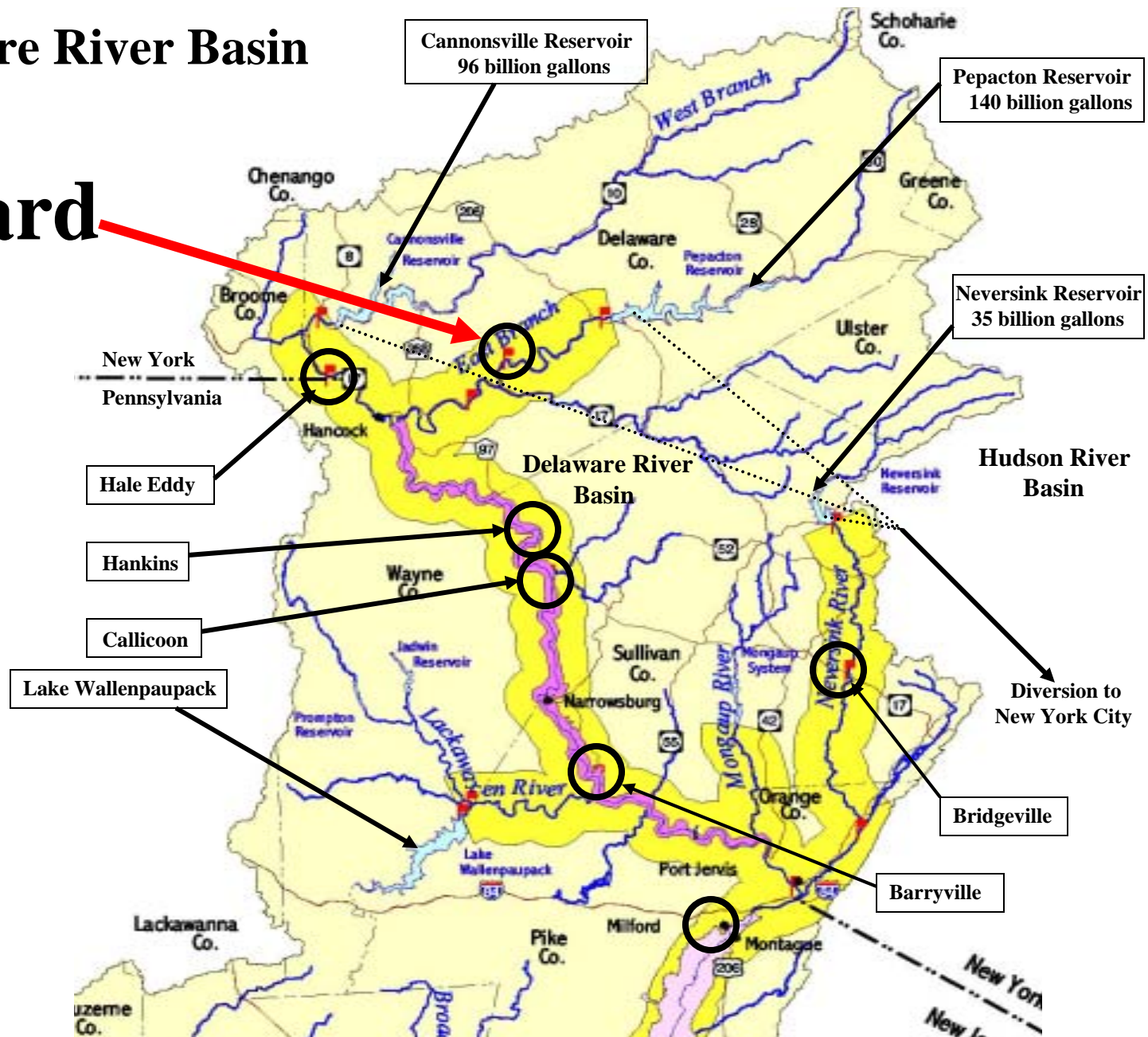


Delaware R at Callicoon
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of NOVEMBER
[computed on daily flows]

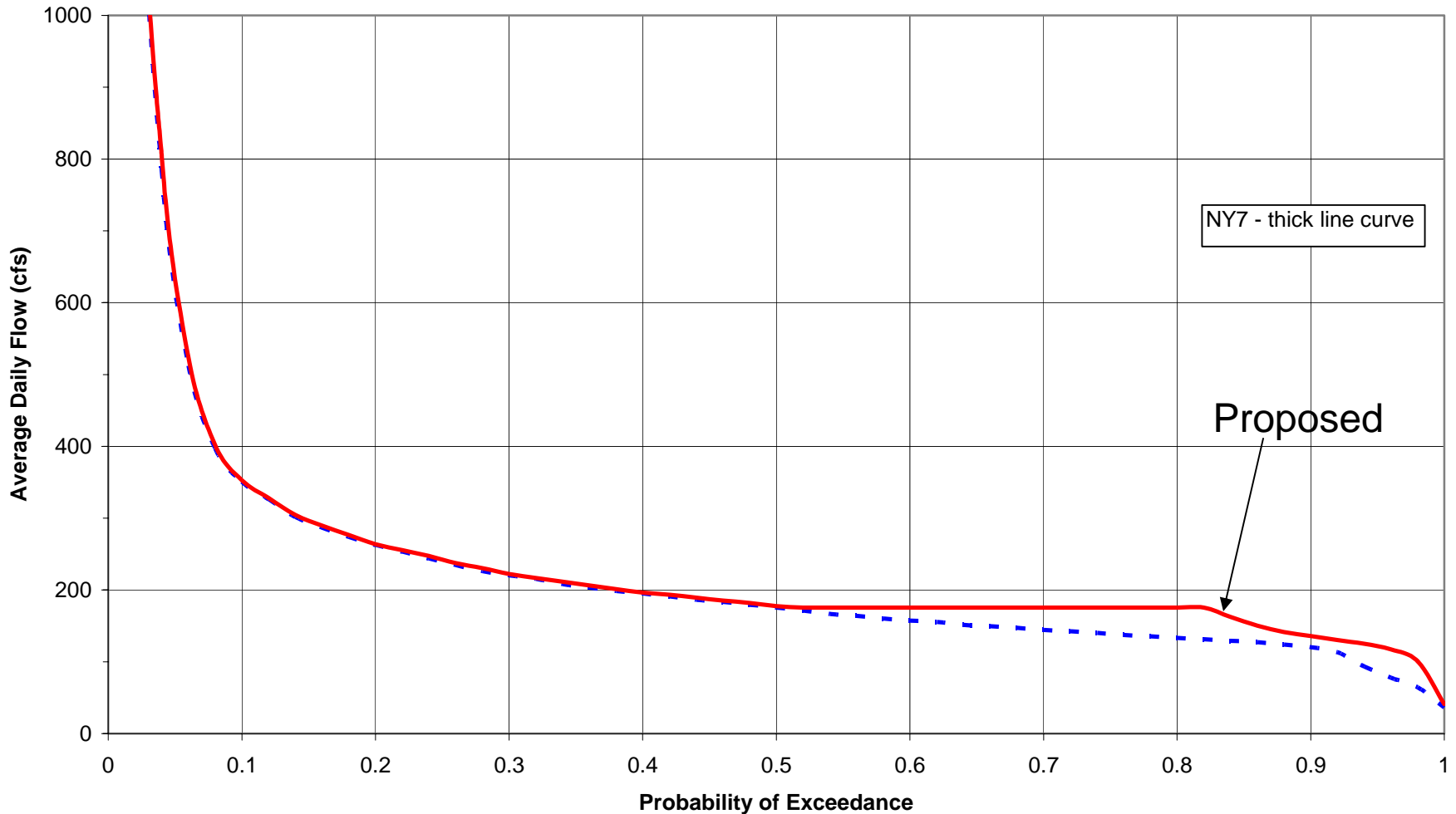


Upper Delaware River Basin

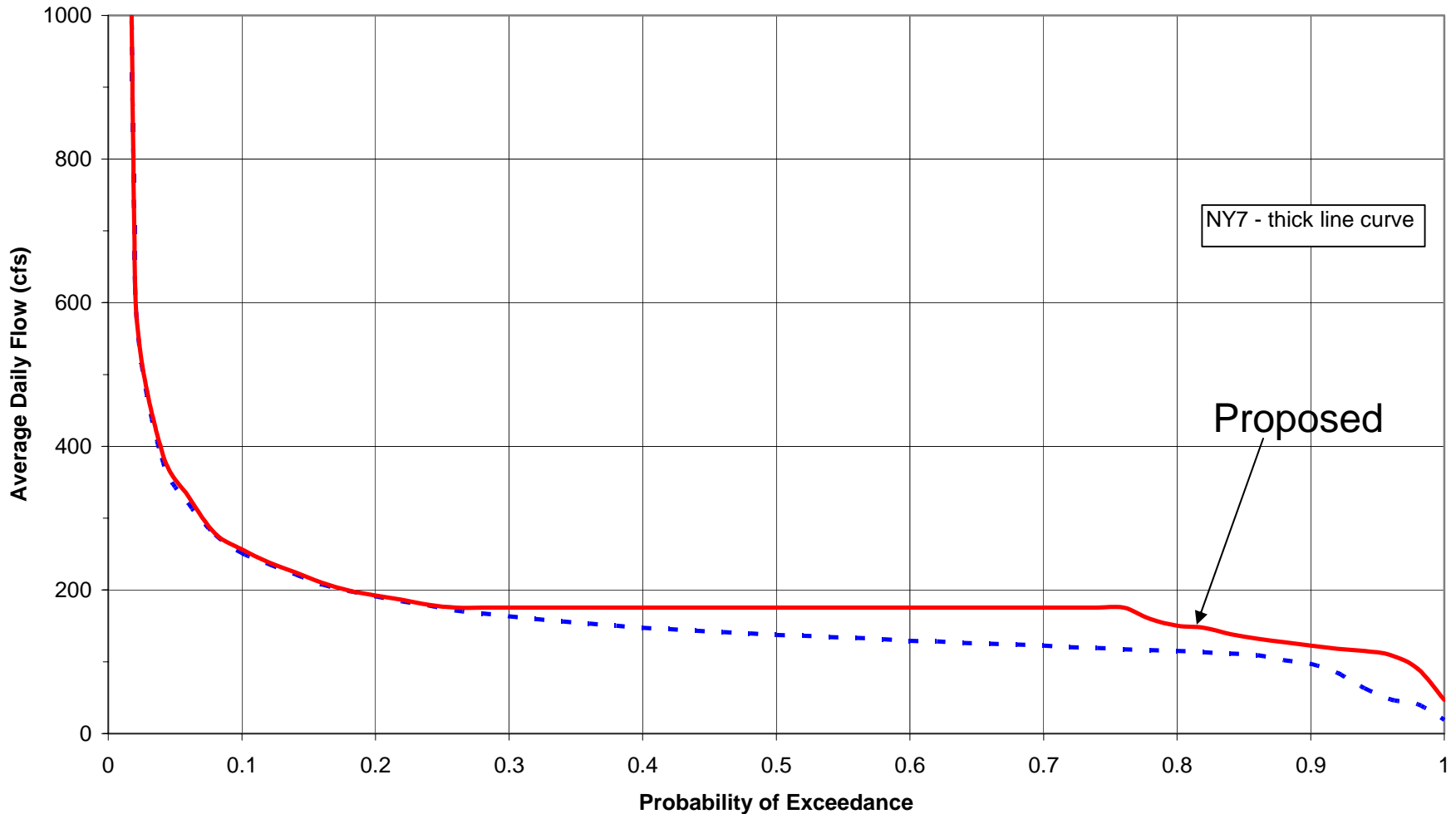
Harvard



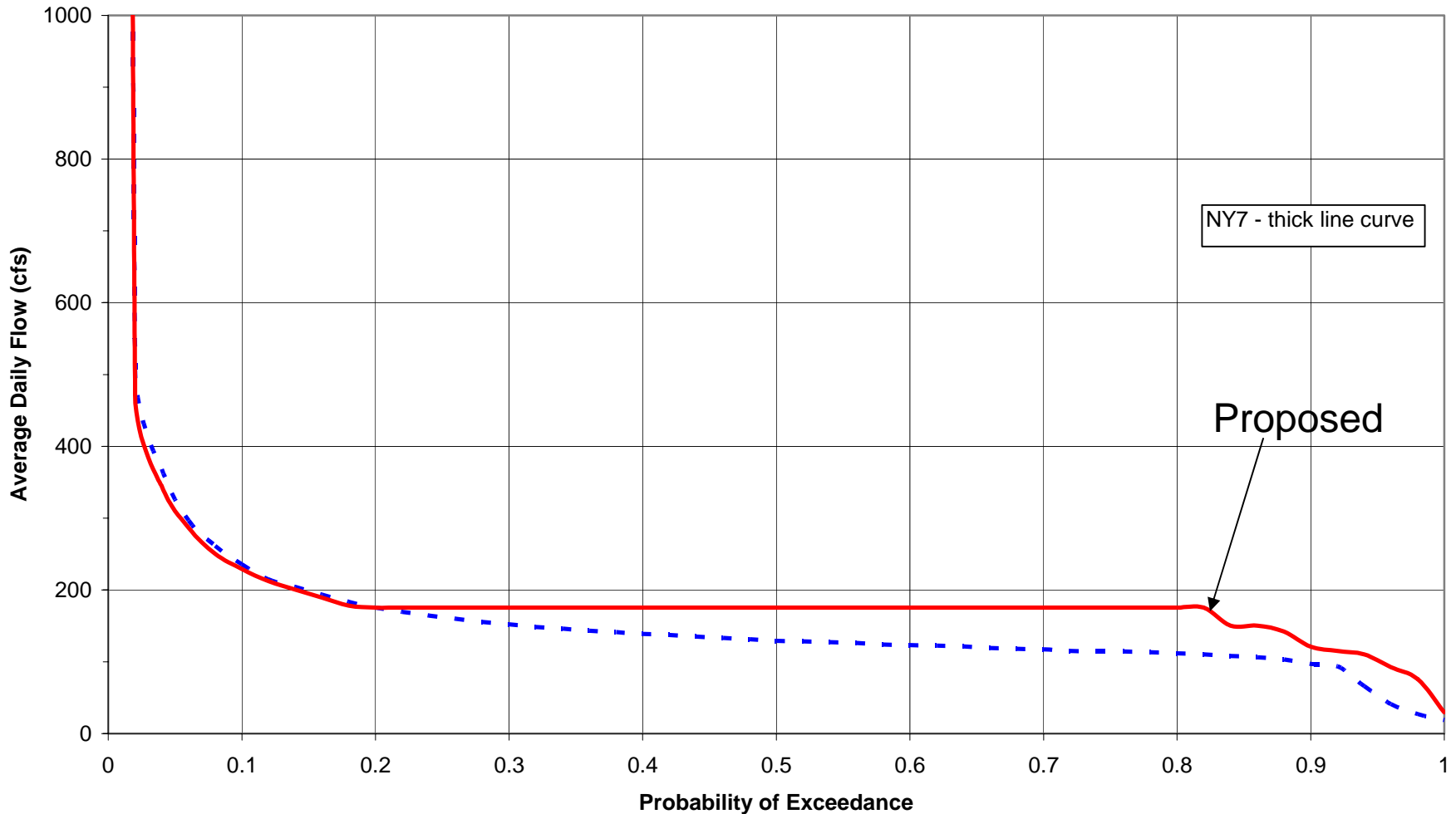
East Branch Delaware R at Harvard
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of JUNE
[computed on daily flows]



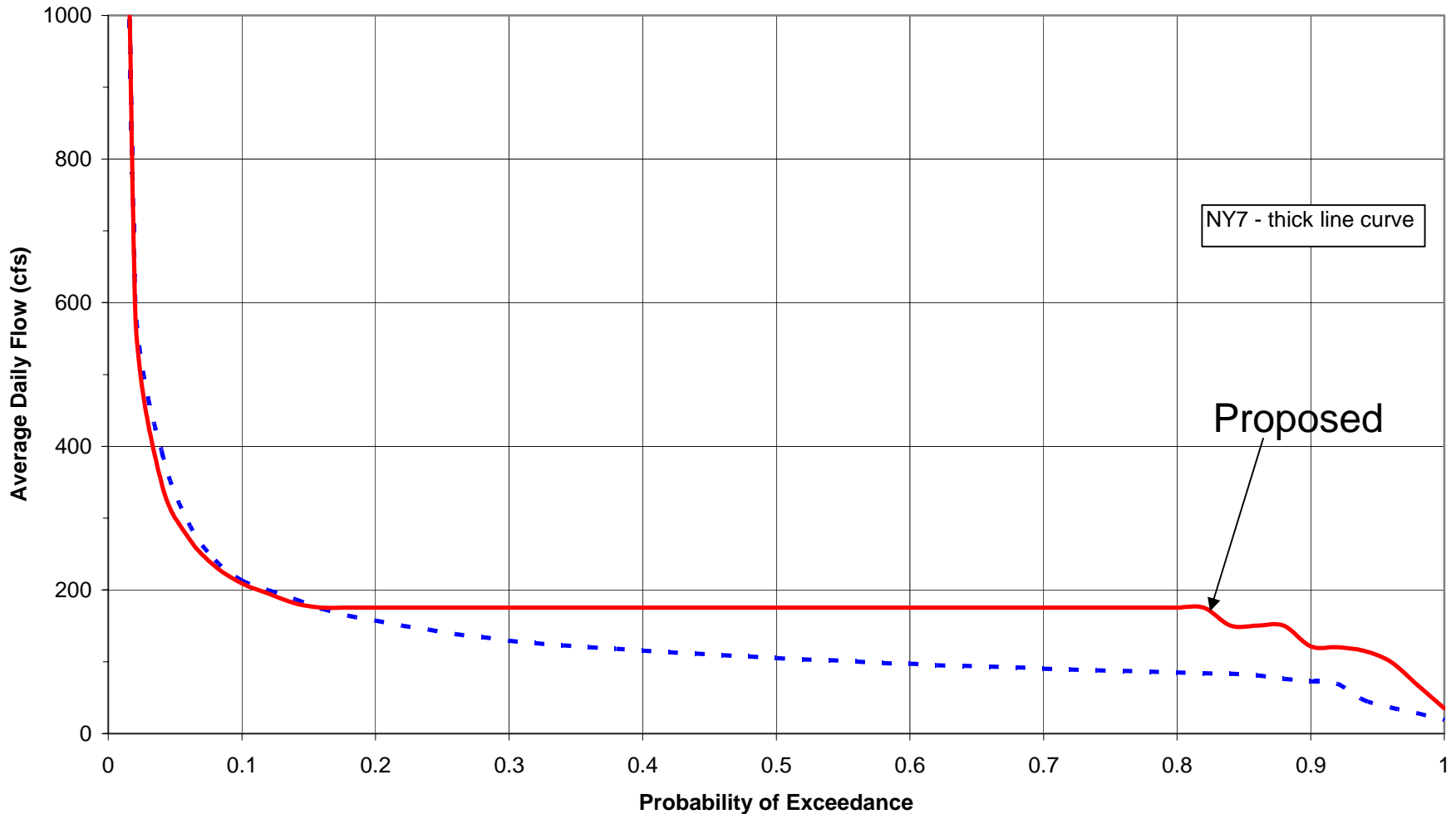
East Branch Delaware R at Harvard
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of JULY
[computed on daily flows]



East Branch Delaware R at Harvard
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of AUGUST
[computed on daily flows]

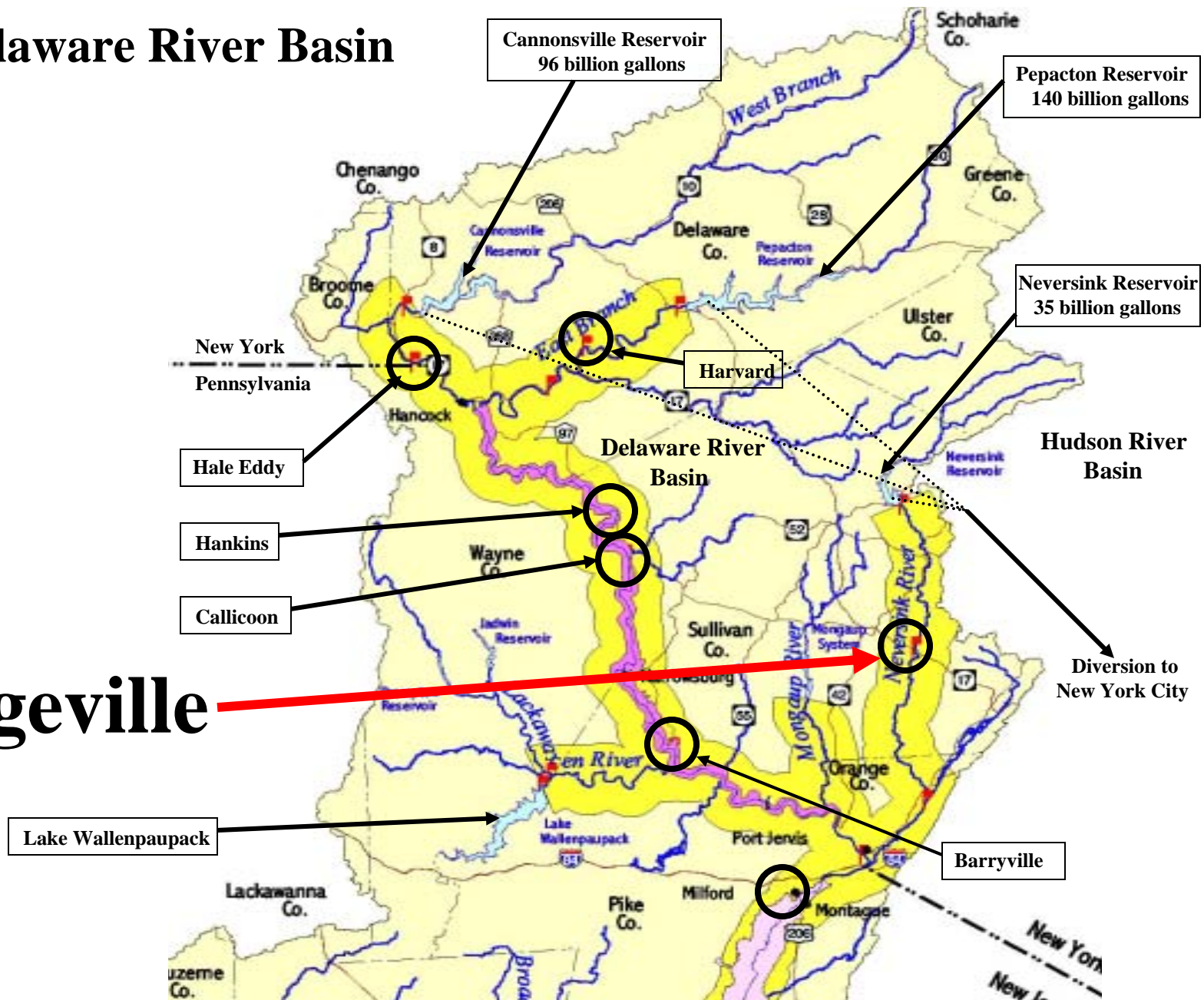


East Branch Delaware R at Harvard
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of SEPTEMBER
[computed on daily flows]

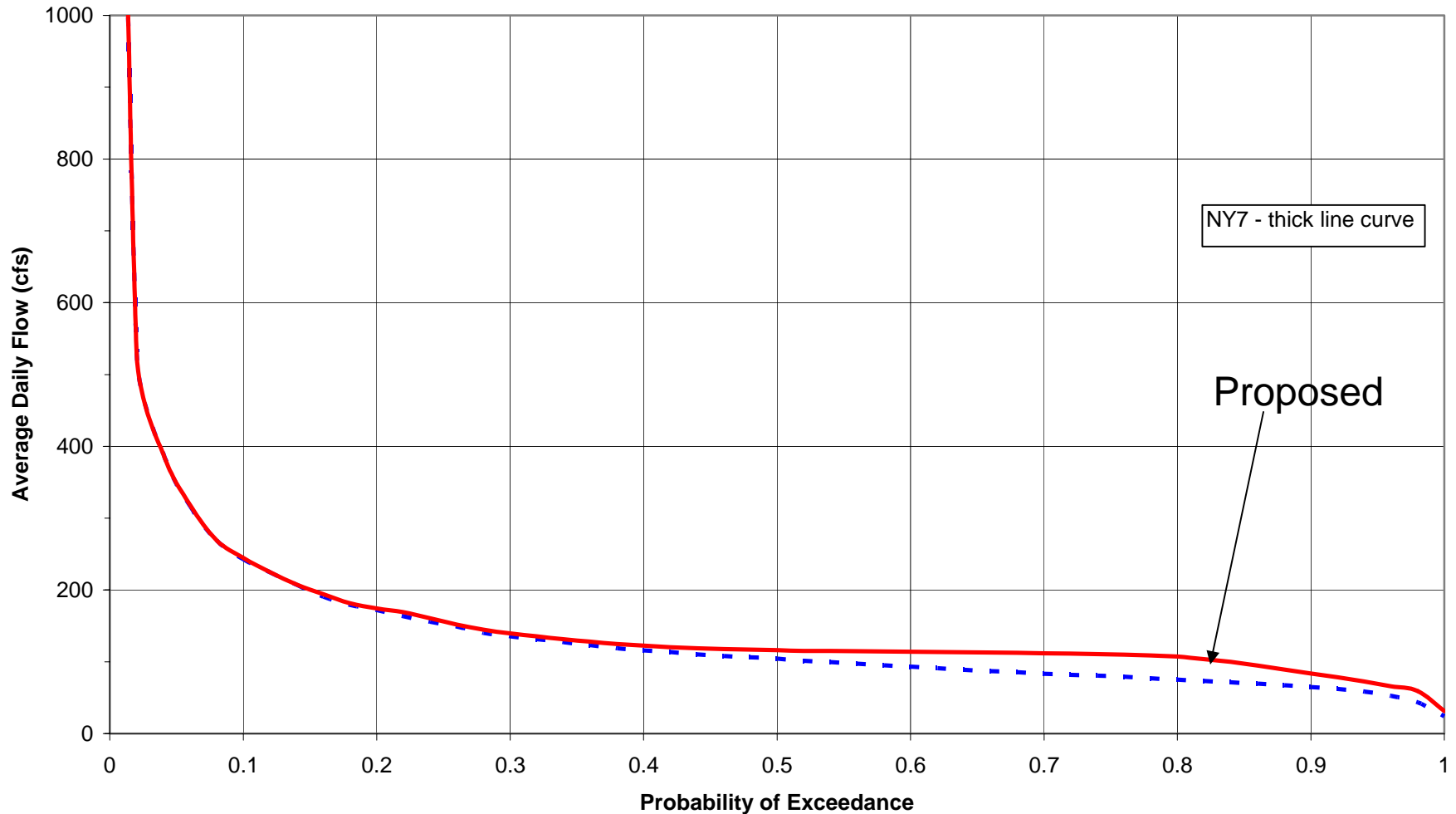


Upper Delaware River Basin

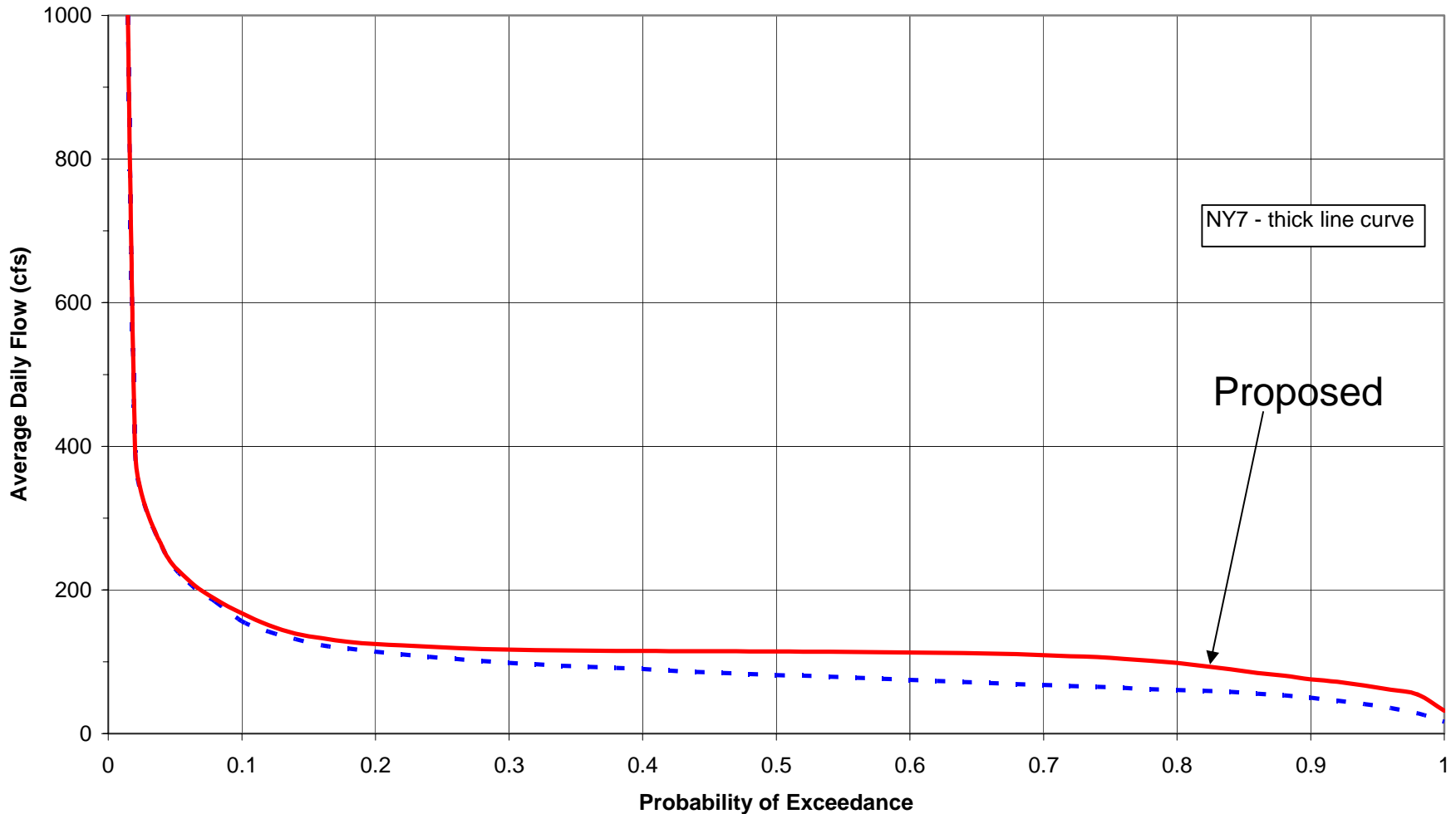
Bridgeville



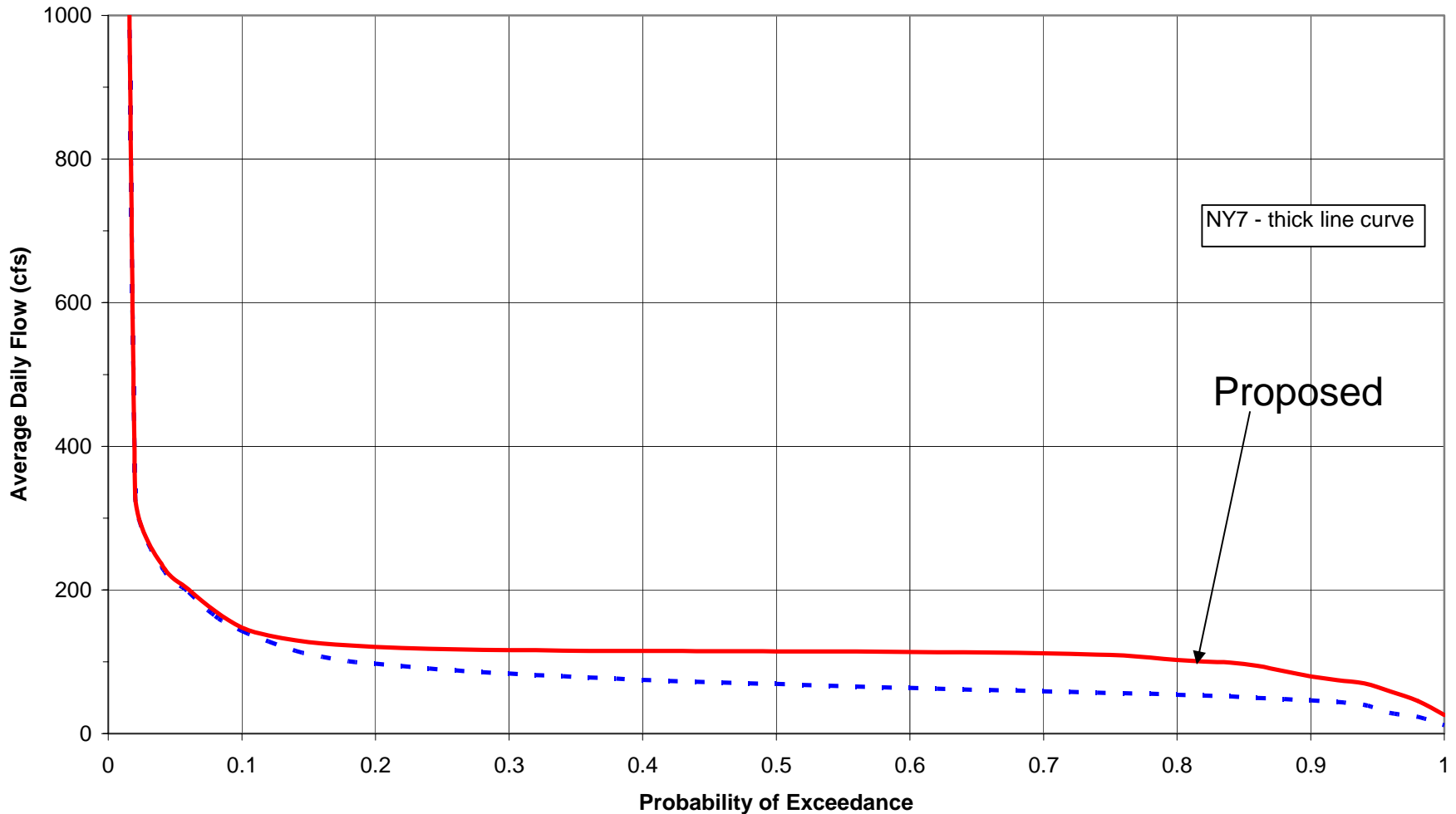
Neversink R at Bridgeville
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of JUNE
[computed on daily flows]



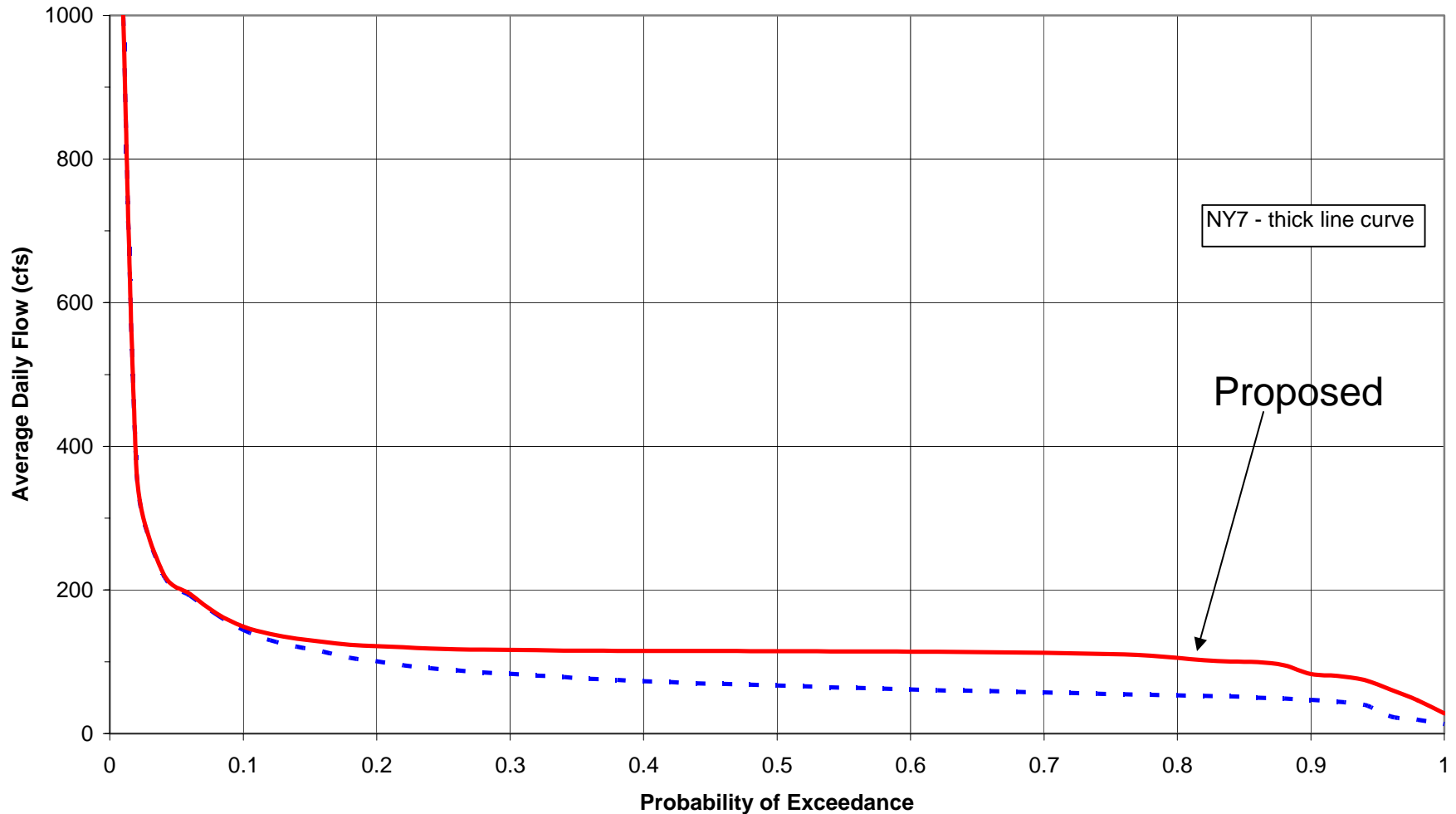
Neversink R at Bridgeville
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of JULY
[computed on daily flows]



Neversink R at Bridgeville
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of AUGUST
[computed on daily flows]



Neversink R at Bridgeville
Comparison of two OASIS runs: NY2-no-ppl and NY7
Flow Duration Curve for the Month of SEPTEMBER
[computed on daily flows]



Estimate of Number of Days in Drought Operations Existing vs. Proposed Plans

Comparison of Number of Days in Stages of Drought Operation - NYC Storage Trigger

Drought Status	Existing	Proposed	% Change
Watch	806	1036	29 %
Warning	1224	1137	- 7 %
Drought	2214	2364	7 %
Total	4224	4537	7 %

Comparison of Number of Days in Stages of Drought Operation - Lower Basin

Based on Lower Basin Storage Trigger

Drought Status	Existing	Proposed	% Change
Warning	1689	1628	- 4 %
Drought	527	409	-22 %
Total	2216	2037	-8 %

Combined for Both Lower Basin and NYC Storage Triggers

Drought Status	Existing	Proposed	% Change
Watch	645	839	30 %
Warning +Drought	4349	4264	-2 %
Total	4994	5103	2 %

Comparison of Allowable Diversions

Allowable New York City Diversion (MGD)

Period	Existing	Proposed
1928-1986	751	748
June '61-May '67	577	567

Allowable New Jersey Diversion (MGD)

Period	Existing	Proposed
1928-1986	93	93
June '61-May '67	74	74

Comparison of Merrill Creek Release Days

Number of Merrill Creek Release Days

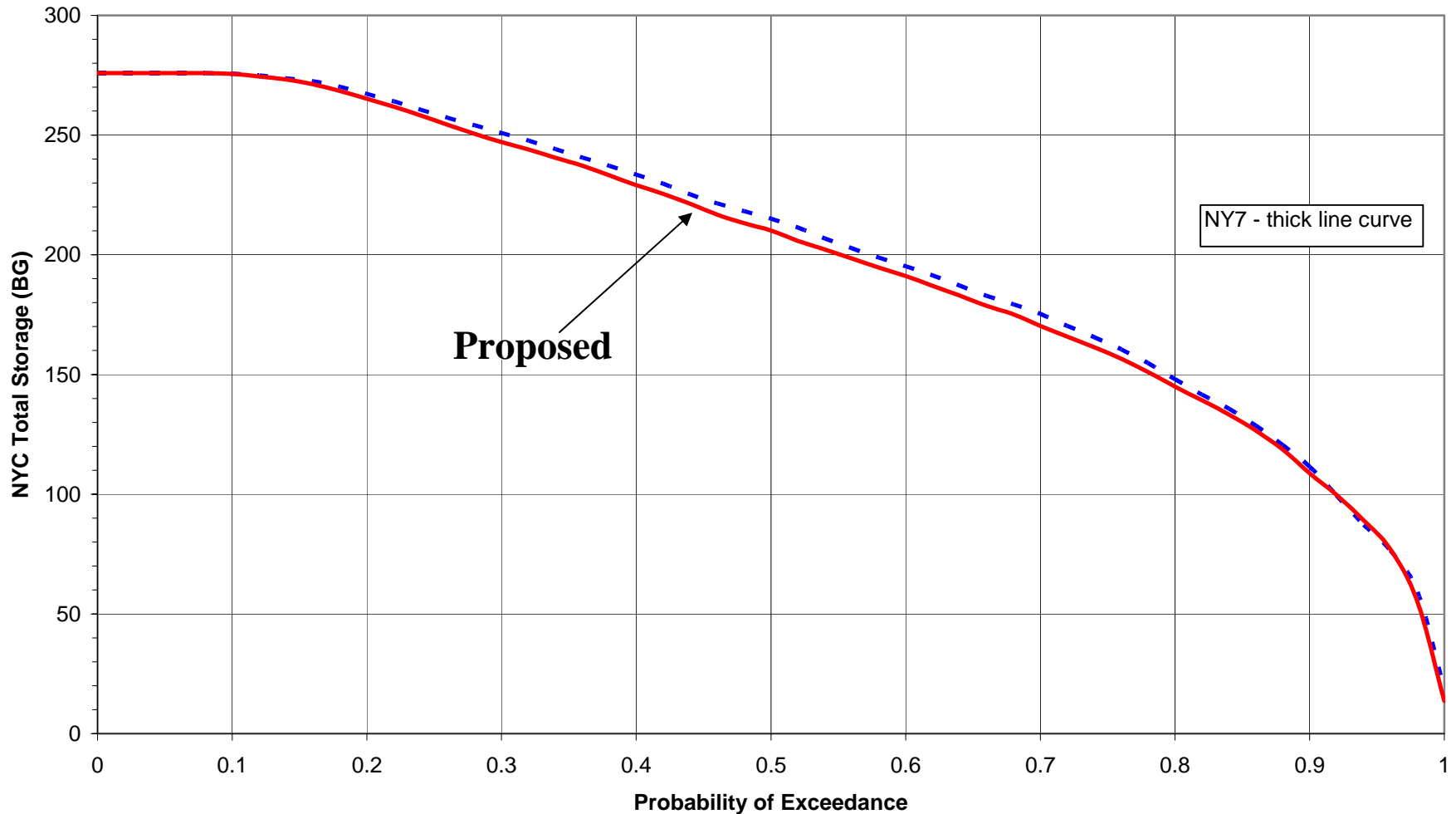
Period	Existing	Proposed
1928-1986	1347	1238
June '61-May '67	544	545

Comparison of Reservoir Storage

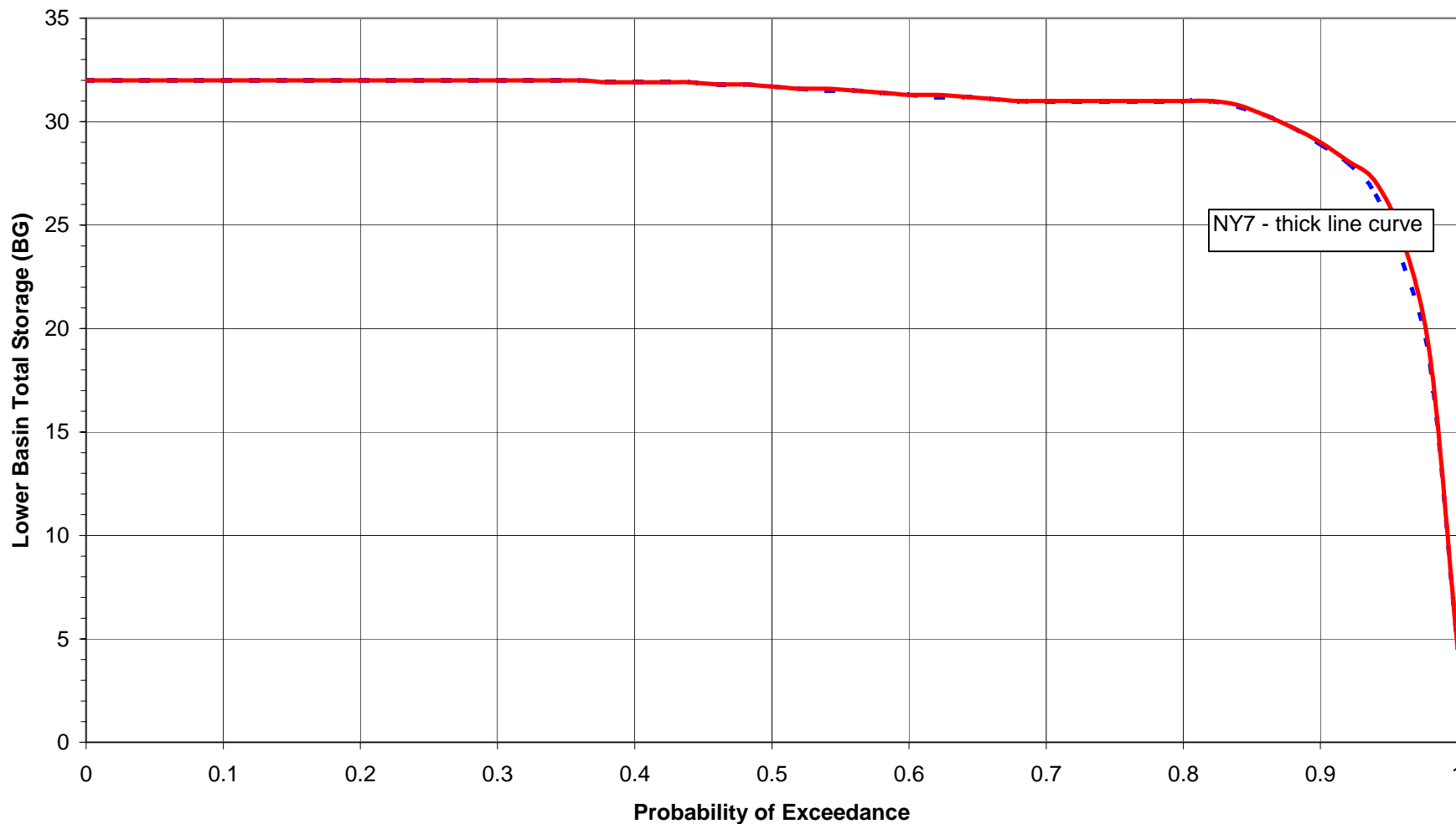
NYC Reservoirs

Lower Basin Reservoirs

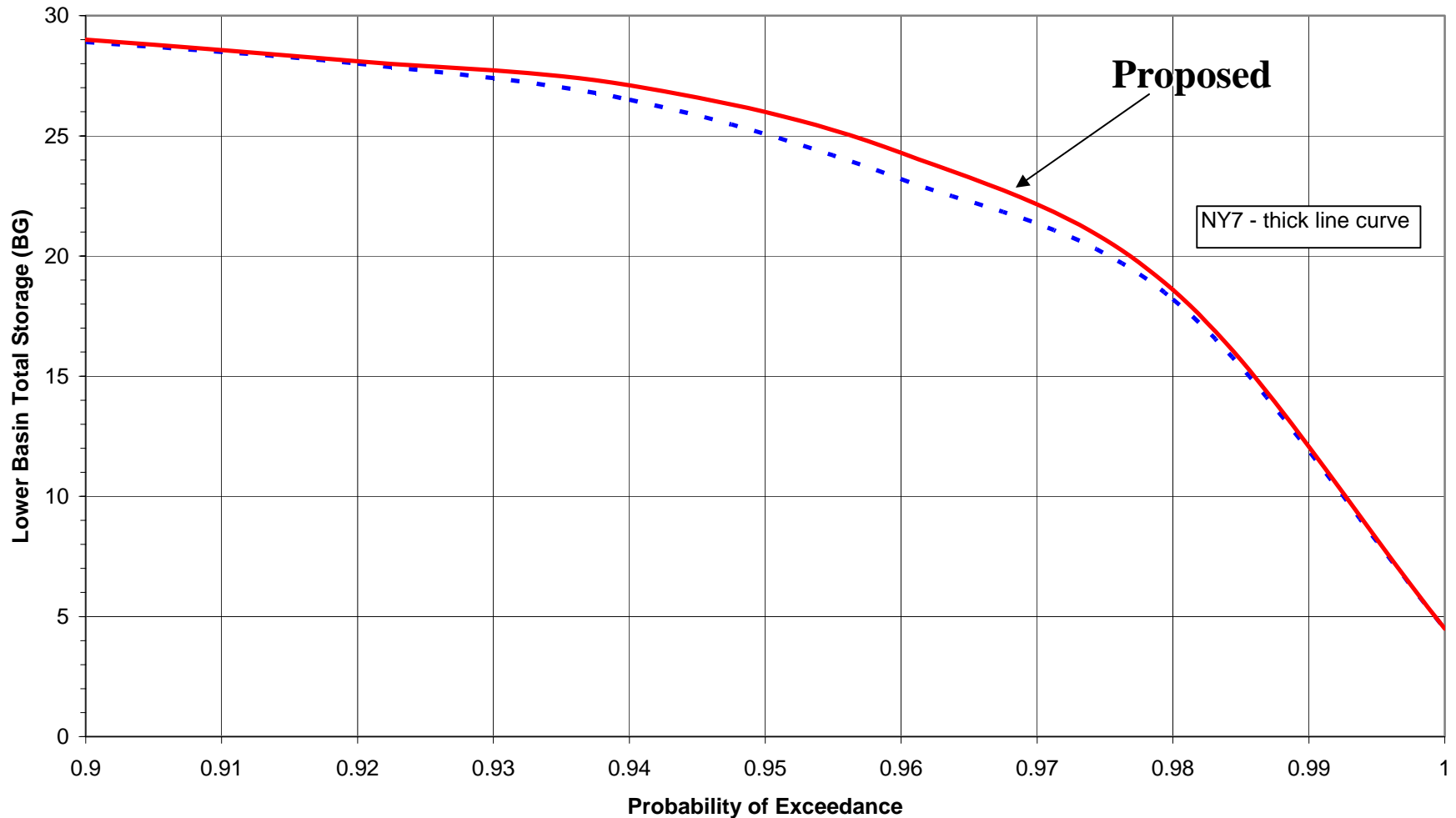
NYC Delaware Basin Total Storage
Comparison of two OASIS runs: NY2-no-ppl and NY7
Storage Duration Curve
[computed on daily values]



Lower Basin Total Storage
Comparison of two OASIS runs: NY2-no-ppl and NY7
Storage Duration Curve
[computed on daily values]



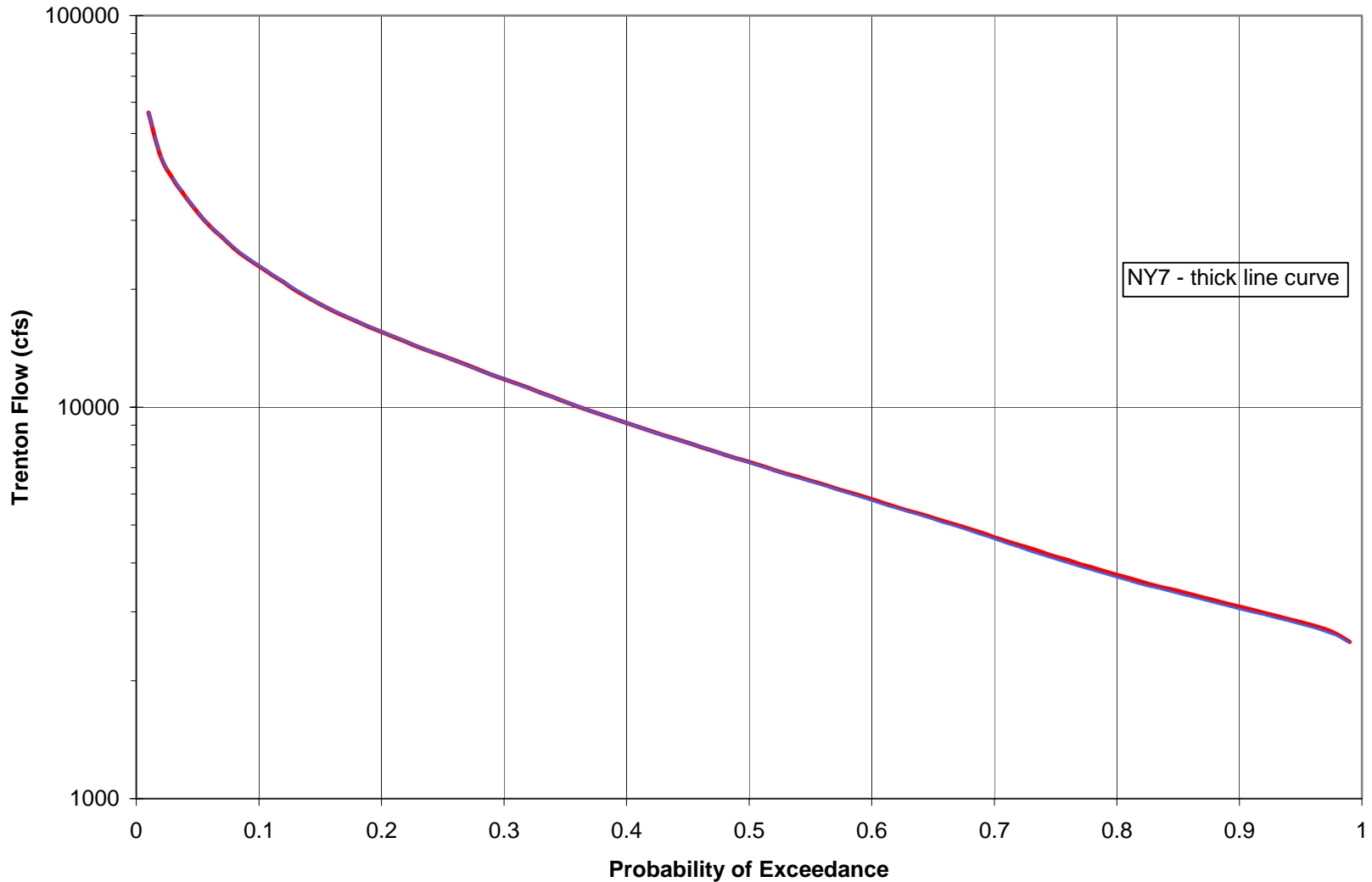
Lower Basin Total Storage
Comparison of two OASIS runs: NY2-no-ppl and NY7
Storage Duration Curve - Partial Plot only shows Storage < 30 BG
[computed on daily values]



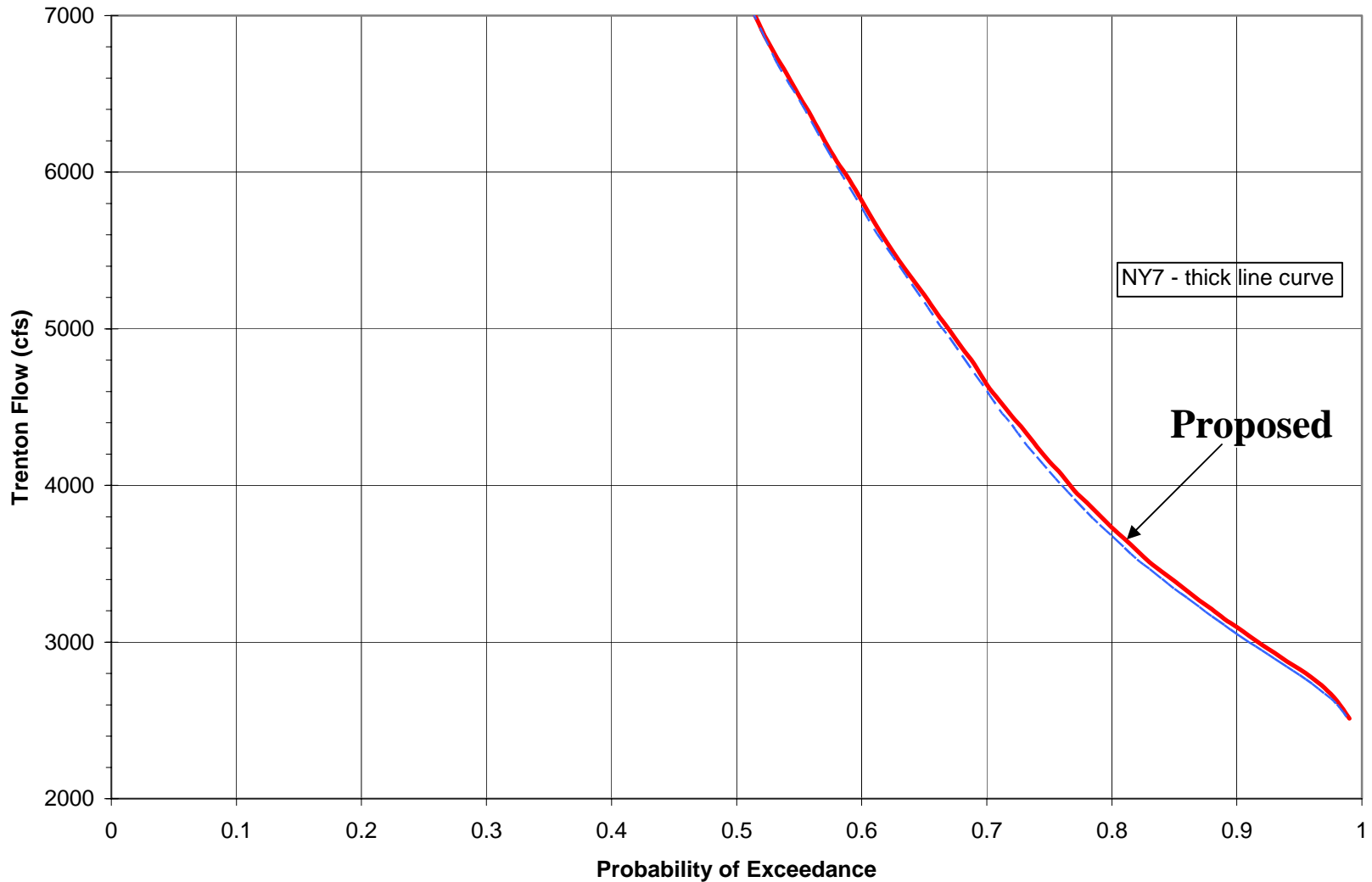
Comparison of Flows at Montague and Trenton

Station	Existing (cfs)	Proposed (cfs)	Difference (cfs)
Montague 1928-1986 June '61 – May '67	5,239 3,443	5,244 3,464	5 21
Trenton 1928- 1986 June '61 – May '67	11,006 7,119	11,011 7,141	5 22

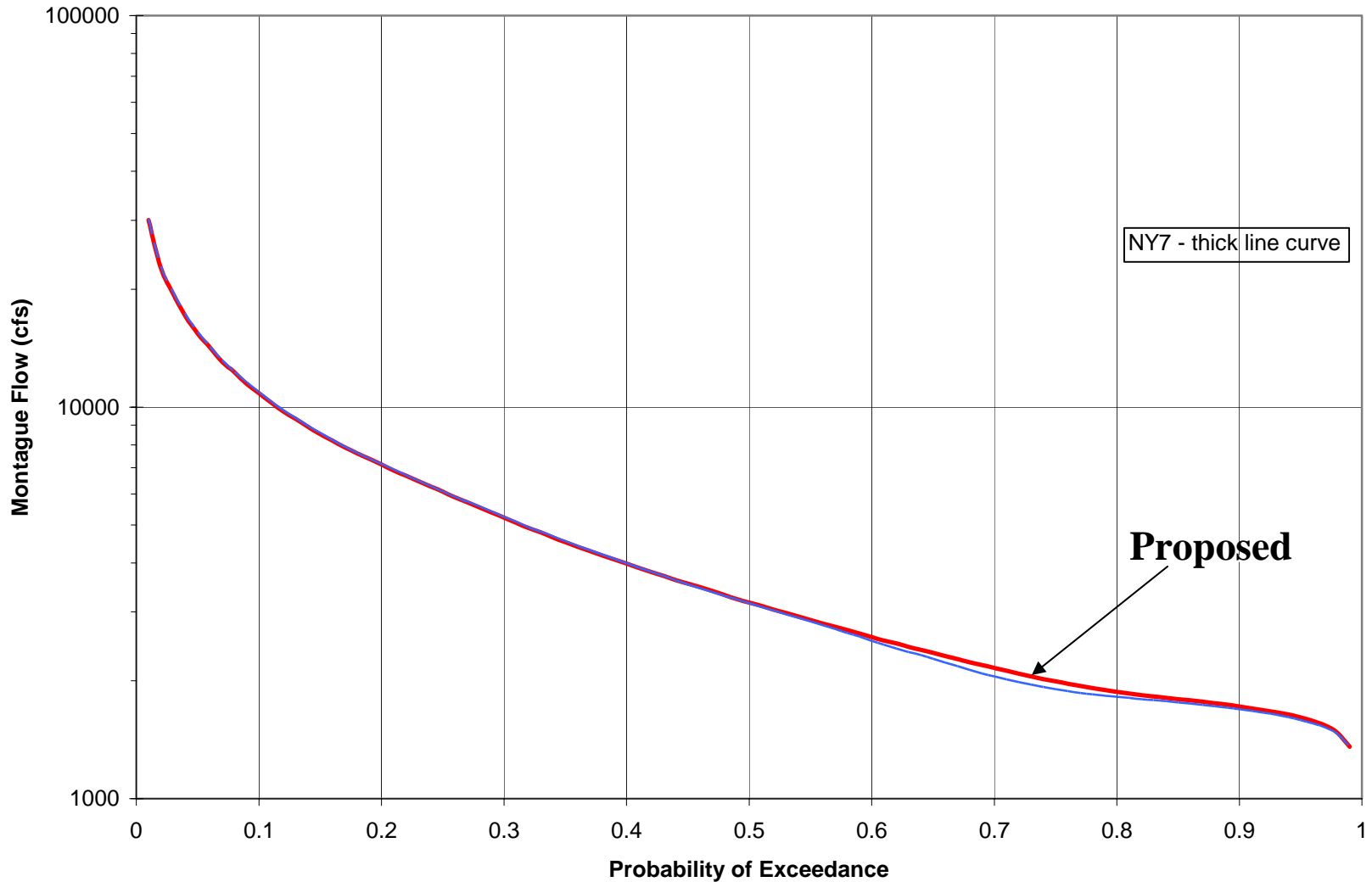
**Flow Duration Curve
Delaware River at Trenton, NJ
OASIS Model Runs NY2-no-ppl and NY7**



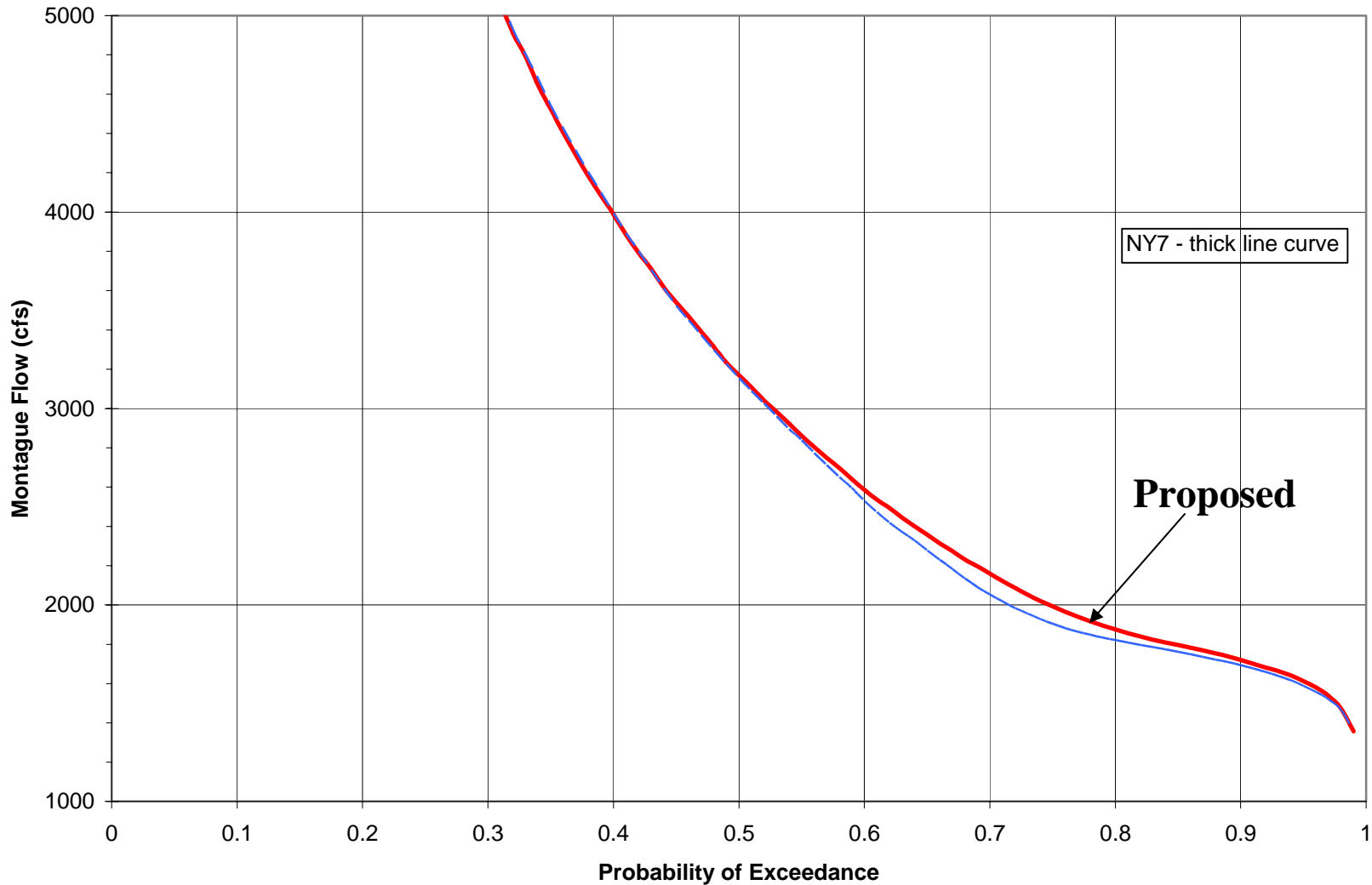
**Flow Duration Curve
Delaware River at Trenton, NJ
OASIS Model Runs NY2-no-ppl and NY7**



**Flow Duration Curve
Delaware River at Montague, NJ
OASIS Model Runs NY2-no-ppl and NY7**

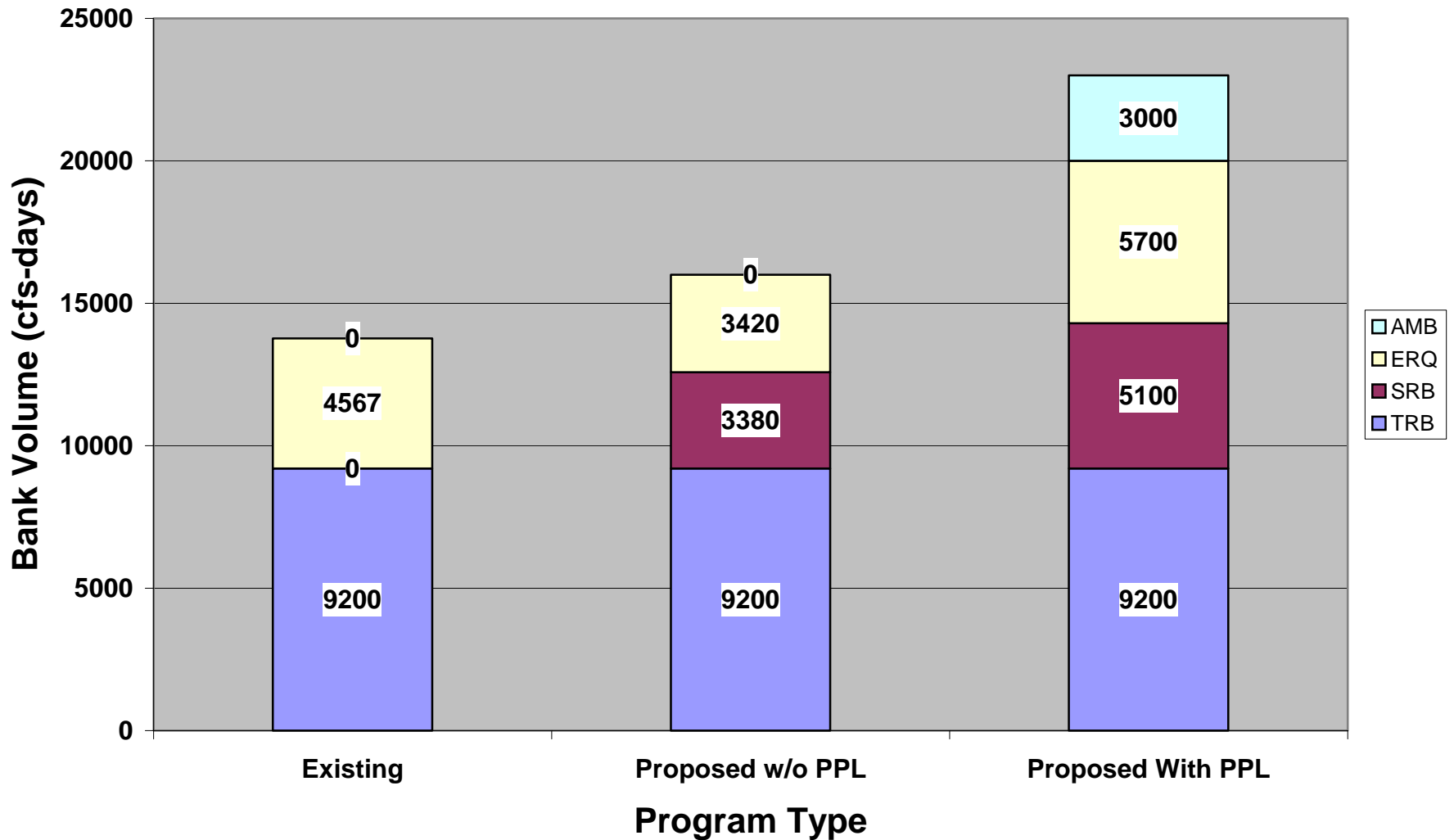


**Flow Duration Curve
Delaware River at Montague, NJ
OASIS Model Runs NY2-no-ppl and NY7**



Comparison of Available Banks Existing vs. Proposed plans

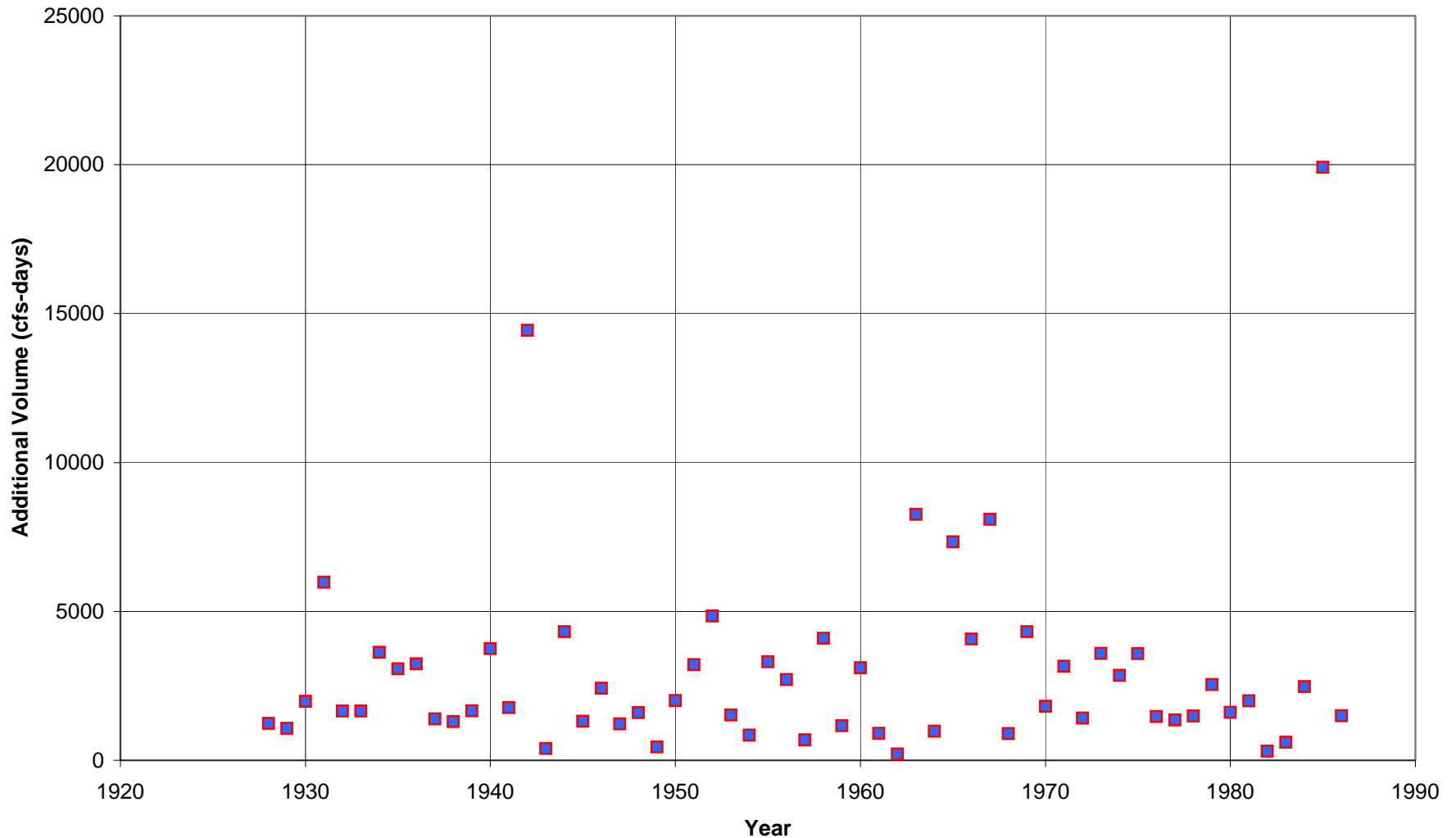
Bank Components Comparison



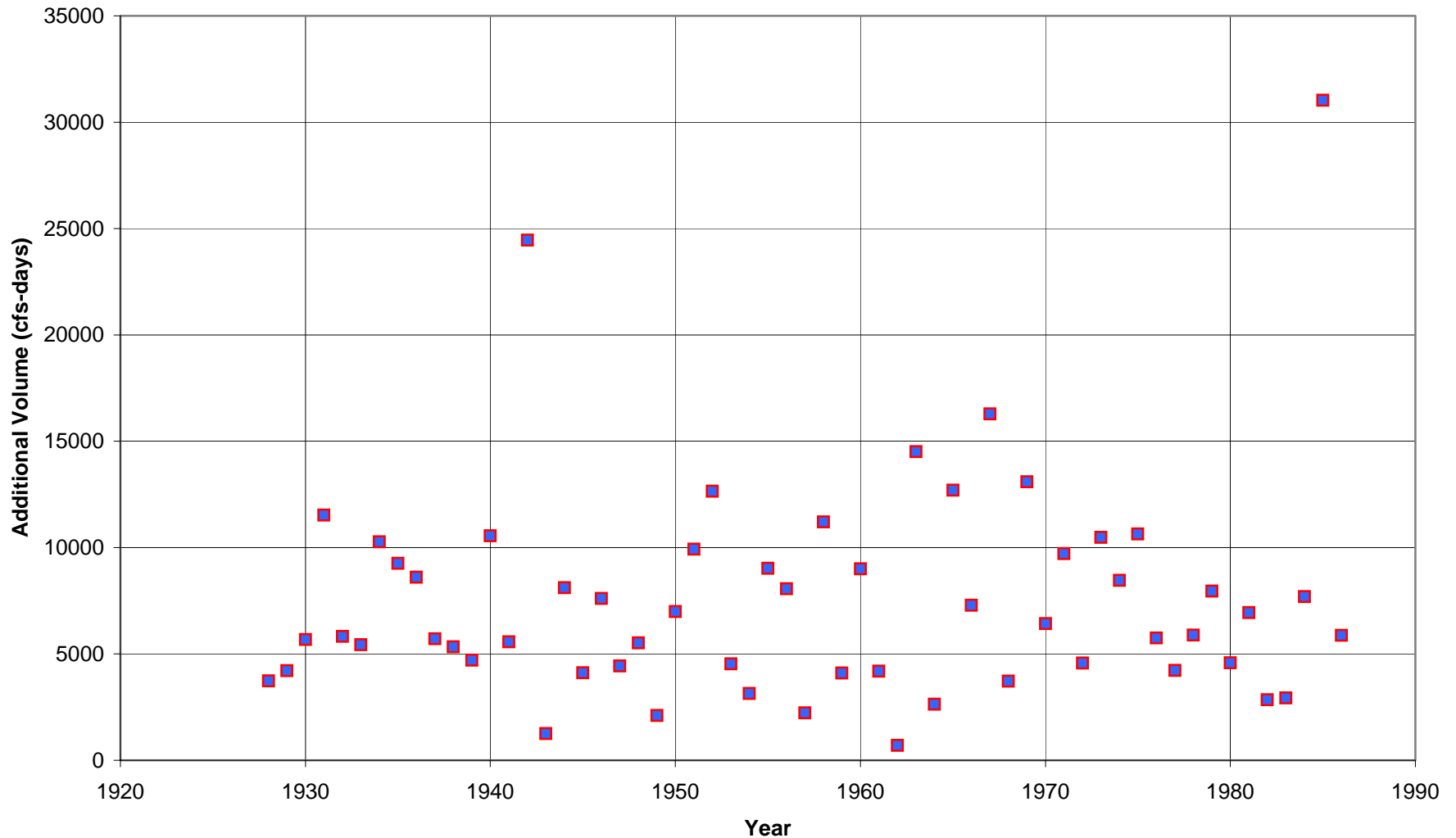
Estimate of additional storage needed for higher West Branch flow targets under all conditions from June through September. Estimates are for the 1927 – 1986 modeling period.

The estimates assume that the proposed fishery plan is in effect.

**Additional Volume of Water (cfs-days) needed each year
to support a 300-cfs flow target at Hale Eddy during JUN-SEP**



**Additional Volume of Water (cfs-days) needed each year
to support a 400-cfs flow target at Hale Eddy during JUN-SEP**



**Additional Volume of Water (cfs-days) needed each year
to support a 500-cfs flow target at Hale Eddy during JUN-SEP**

